The Builder.

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Conventionalism in Art.

NOTWITHSTANDING the frequency with which the above-named term, and its opposite, "realism," have been bandied about by recent writers on art, it may be doubted whether a majority of readers connect any very certain or definite idea therewith; whether the importance of the principle which it represents, as bearing on the objects and forms of expression of Art, is adequately recognised. Perhaps a good many who not unfrequently make use of the word "conventionalism" would find it difficult to explain the precise meaning in which they use it; and those compilations which profess to define the signification of words give us no help here. It is almost needless to say that the term was not in existence in Johnson's time. Webster recognises it; defining *convention* as "the act of coming together," hence "agreement, &c."; and *conventionalism* as "that which is received or established; convention or agreement." Richardson's later dictionary, again, ignores the word, giving only *conventional*, illustrated by a quotation from Reynolds,—"Poetry and elocution of every sort make use of signs, but these signs are arbitrary and conventional." The omission of the one word, and the illustration of the other, equally show that Richardson, as well as Webster, was quite unacquainted with the term "conventionalism" in its modern use in reference to Art; indeed, owing to the indifference to Art characteristic of English literary students in general, a dictionary of the English language is generally about the last place where one may look for new light in regard to terms of this class.

The fact is that just as "conventional" is a derived meaning from "convene" and "convention," so "conventionalism," again, is a derived meaning from the adjective, a degree further removed from the original signification of the verb. The quotation from Reynolds given by Richardson indicates plainly enough the meaning of "conventional," as applied originally to signs, such as letters and symbolic figures,—things which have no meaning in themselves, and no necessary relation to any fixed idea, but to which we have agreed to attach certain ideas. Reynolds, who was probably as innocent of artistic conventionalism, properly so called, as his friend Johnson could have been, thus distinguished between the signs used in writing, which were purely arbitrary and selected, and those used in pictorial art, which were expressions of unalterable and universal forms of nature. And so long as pictorial art is regarded as merely this,—as purely imitative of Nature,—in her forms and details, there is no need for any intermediate shade of meaning other than this broad and general one to be attached to the word "conventional." But when modern art-criticism commenced to weigh and to discriminate principles more accurately,—to look (may we not say) more deeply into the meaning and objects of art than the practical realistic school of Reynolds and his compeers, for the most part, cared to look,—it became apparent that between pure realistic imitation and purely arbitrary symbolism lay many degrees and grades of departure from nature; that possibly realistic imitation was not everything in art; that even in the imitative art of painting there could be a use of natural types without literal imitation,—not arbitrary, yet so far "conventional" that it permitted of a choice on the part of the artist as to how near to nature he would go, even of an "agreement" on the part of a school of artists to recommend departure from nature up to a certain point, more or less defined by canons of criticism. To this tendency (much more marked at some periods, and in some schools of art than in others) to depart more or less, in imitative art, from the real forms of nature, we have gradually concurred in giving the name of "conventionalism," as expressive of a principle of treatment which, while totally distinct from that arbitrary choice of symbols properly styled "conventional," is yet arbitrary as far as this, that it leaves us free to choose in what degree or in what special qualities we will endeavour to imitate nature.

But though it is in connexion with the art of painting that the existence of these two principles, conventionalism and realism, has been most clearly made manifest and recognised, and the strife most actively carried on between their respective adherents, yet that would be a very superficial view of art which should regard this opposition of the two principles as confined to the painter's art. In fact, the question as between conventionalism and realism is one which concerns more or less every form of artistic expression, and is intimately associated with the most essential considerations as to the objects and even the very existence of art in the widest sense. If the sole end of the various forms of art which more or less imitate nature, is to form a lesser world within the natural world, a mere mimicry of the beauty of the latter, then is realism the true goal of the artist, and power of technical execution becomes all-important as the sole means of attaining his end. In regard to painting in particular there have not been wanting able and acute critics to support this view; among recent adherents to this school we must count, apparently, one of the most brilliant contemporary French writers, M. Taine, who has criticised our art and literature with much originality and insight. Such a view, however, very much narrows the sphere and lowers the status and mission of art. It places art below even material nature; renders it, in fact, only a kind of dignified plaything, a means of reproducing in a fainter degree the same aspects or sounds or combinations which give us pleasure in nature. Such a view we take to be radically wrong; and to have been entirely suggested, probably, by the fact that one of the objects of painting and sculpture is to a certain extent imitative, from which a hasty generalisation has been made to the effect that art copies nature. There are other branches of art which afford little basis for such an idea; and the fact that painting comes nearer to literal imitation affords no real basis for it either, the distinction in this respect between it and other arts being incidental rather than essential. All art stands on the same common ground, so far as general object and principles are concerned; and the enjoyment we derive from it is distinct from our enjoyment in nature, in kind as well as in degree.

Could we really reproduce in their completeness and intensity of effect those things which in nature cause us delight,—could we re-create nature for ourselves,—conventionalism would be then an impertinence or a mere imperfection. But we cannot do so, and therefore when working as artists we take our stand on a different ground. We endeavour, not to reproduce nature, but to produce that which will stir and affect our own feelings in the same manner as natural beauty affects them. And so we select various classes of types or phenomena in nature as a language through which to speak or to render visible our thought. Since we cannot imitate and reproduce nature as a whole, we avoid the attempt, because it would always expose our work to disparaging comment, as falling so far short of the original. But we can select for ourselves such phenomena as we are able separately to deal with, and from which we can make a language or a form wherein to clothe our ideas. We can do this through colour, through light and shade, through form, through rhythm and harmonic proportion of sound. We use the human form, in various representations, as the means of expressing feelings and ideas; but we do not as a rule attempt that degree of *vraisemblance* which can be called deceptive or completely imitative. We eliminate that which we cannot fully imitate, and only seize those points which suffice to express our idea. We may approach nearer to nature, with success, in some artistic media than in others. We approach nearest in painting, because there we have the elements of form and colour, and can give the effect of relief, sufficiently to satisfy the judgment, without being accused of attempting any imposition on the senses of the spectator. The most careful execution will hardly cajole the eye into the belief that it is dwelling on reality instead of on a show. But the case is opposite in sculpture. Here we have the actual form, relief, and contour of nature repeated in solid and tangible reality. But for that very reason we shrink instinctively from applying imitative colouring, and thereby challenging direct comparison with the reality. Such an attempt would defeat its own end. For, in the first place, it cannot be supposed that the most subtle sleight of hand would avail to rival all the cunning of Nature in her infinite details, and we are again in danger of condemnation as bungling imitators. But suppose we could succeed in absolutely cheating the spectator, for the moment, into a belief in the life and reality of our work, what have we gained? Merely the praise of a cunning and painstaking sleight of hand; and what, on the other hand, have we lost? We have lost the object, the meaning, and end of our work, which was to express an idea, not to concentrate the spectator's attention on a feat of mechanical execution. It may be true, as Byron put it, that we—

> "Have seen much finer women, ripe and real,
> Than all the nonsense of their stone ideal;"

and the ripeness and reality we cannot remake and imitate; but that which is greater than these we can,—the poetry of form, of gesture, of expression, which will be all the more impressive in proportion as we refrain from weakening their effect by attempts at literal imitation of more material beauties. We may have seen landscapes, sunsets, moonlights in nature, more intense in their beauty and consequent effect upon us than any imitation of them on canvass could ever be; but the spirit of them we can reproduce, and from their elements create new scenes and new feelings which we have never actually met with in nature. We may be more deeply touched by the sounds of the sea, and the brook, and "the trees of the wood moved by the wind," than we could be by any attempted artificial imitation of them (which, indeed, in almost any conceivable case must be a mere piece of grotesque); but we can translate into measured tones the feeling which runs through these unmetrical sounds of nature, and so we may have such things as the "Pastoral" symphony of Beethoven and the "Fingal's Cave" overture of Mendelssohn; not imitating either the brook or the tempest or the sea, but calling up in us feelings analogous to those excited by these natural phenomena and their associations. So

that, in whatever art-language we speak, it seems that we use forms or types which are parts of nature, as a language conventionalised to express feelings which are too subtle to be expressed in words. We will carry on the subject in our next.

THE CHAPTER-HOUSE OF WESTMINSTER.

It is now some years since we first called the attention of our readers to the neglected state of the beautiful Chapter-house of Westminster, as we did afterwards to the effort which was about to be made, under the auspices of the Very Reverend the Dean, to proceed with the restoration of that building. This has now been effected to a certain stage. Not only has the progress of decay been arrested, and the building placed in a thoroughly sound and weather-tight condition, but relics of ancient work have been discovered and preserved which throw light on the history of ecclesiastical architecture and decoration in England. A hall of great elegance has been added to the venerable series of the chapels and chambers of Westminster; the very cradle of English history since the date of the Norman Conquest. What yet remains to be done is to replace, to some extent, the dilapidations of time by the erection of appropriate woodwork; and, above all, to fill the large windows, the white light admitted by which is incongruous with the character of the vaulted apartment, with the jewelry of appropriate stained glass. We give a view of the restored building in our present number.*

The Chapter-house at Westminster is an octagonal building, to the south of that entrance to the Abbey known as "Poets' Corner." In the centre of this hall rises a lofty shaft of Purbeck marble, around which eight smaller shafts are clustered. From the bold and graceful capital of this central column, groined arches spring on either side to the walls. The roof is built of white chalk, groined with ribs of fire stone. The bosses which form the keys of the groins, although new, are executed from ancient designs. Four of them represent sacred subjects:—Moses with the Law; David, the author of psalmody; the Angel of the Annunciation; and the Virgin receiving the mystic Ave;—the other four are boldly foliaged. A wall arcade surrounds the entire building, with the exception of the western side of the octagon. Here the only entrance to the Chapter-house is situated,—a doubly-arched portal, which leads through a vaulted passage to the great cloisters, from which entrance is now afforded by two iron open-work gates. There the prior and monks were able to assemble in a veritable conclave, free from all possible interruption from the outer world. The entrance was decorated with extraordinary splendour. It was surmounted with a large pierced quatrefoil, in the centre of which was placed a large seated figure of Christ. An angel with a thurible attends on either side; and in the four eyelets are the well-known emblems of the Evangelists. Around the main arch of the doorway, and harmonising with its rich mouldings, was sculptured a tree of Jesse—the royal and patriarchal figures leading the attention up to the central occupant of the throne.

This portion of the Chapter-house was in a lamentable state of ruin. The central pillar, dividing the arch, was thrown down, as well as the greater part of the tracery. The windows of the passage were destroyed, and their apertures wholly blocked up. It has been only by taking the utmost care of every fragment of the original work that the task of restoration has been rendered possible. From a springer here, and a moulding there, a shattered sculpture or a fallen shaft, evidence has been gained of the features of the original work. To uncover from protecting whitewash the happily preserved diapers, and mural paintings, and delicate decorative features of the building, has been a labour of love, carried out with patience.

When the work of restoration was commenced, the central pillar of the Chapter-house was in a threatening condition, inclining towards the south-west. Many of the slender clustering shafts were broken and loose, being only bound together with coils of copper wire. The capital had been split into several portions, some of which had been replaced with plaster of Paris. The whole had been adorned with several thick coats of stone-coloured paint. On removing this, and taking down the loose shafts, the broken capital, and the annulets, the central pillar proved to be perfectly sound. It is formed of a number of short cylinders, lying on their beds, the whole being held together by a bar of iron placed in a central perforation, and run in with lead. To this latter precaution the preservation of the shaft is due. Had the bar been run in with lime-mortar, the surrounding column would have been long since riven asunder by the slow but irresistible process of the oxidation of the metal. About a quarter of the metal required replacement, but to effect this was easily possible, from the sharpness of the mouldings in the sound portions. Copper plates have been inserted, which cover nearly the whole surface of the bed, and bind the portions of the restored capital together. The moulded annulets are new, with the exception of a portion of the central part around the main shaft. All the new portions are bonded together with copper.

The floor of the Chapter-house is covered with tiles, which have been well preserved by the wooden floor that was placed over them when the building was desecrated. Only some 30 ft. of the entire superficies were missing, and even this deficiency appeared to be due rather to the decay of the tiles, from imperfect burning, than to violence or wear. The defective portions have been made good by new tiles, executed by Messrs. Minton & Hollins. There are nearly sixty different varieties of tiles used in this floor, of which forty have been made in imitation. The bearing of the kings of England since the time of Richard I., who added the third lion (that borne by the Dukes of Aquitaine) to the Norman two, is the prevalent ornament. But below the base of the shield, in a position, so far as we are aware, that is without precedent, are the centaurs of Stephen, which, though not grouped as either "tenants" or supporters, must have been placed there for heraldic reasons. On the southern side of the floor are six lines of lettering in bands running north and south. The letters are in separate *tesseræ*, capable of being arranged like type. They are much decayed. One word is traceable, which we read as, *resonans*. The foliage on others of the tiles is bold and spirited. The interesting character of this floor needs no comment.

The arcades round the wall of the Chapter-house appear to have been all decorated with mural paintings, in oil, and by inscriptions, written on thick paper, and carefully attached to the walls. In those places where doorways have been broken through,—namely, in the south-east, the north-east, and the northern sides,—all vestiges of the paintings have, of course, been destroyed; but enough remains, not only to give a clear idea of the style of their ancient artists, but to enable us to understand the general plan of the chromatic decoration of the building. The gold, which has been freely used, remains in many places as fresh as if it had been applied last year. The tracery of the canopy-arches was painted in red and blue, relieved with gold. A series of sacred paintings ran round the arcade; the whole history of St. John the Divine, including his vision, being represented in separate groups. Below these celestial scenes were drawn a series of natural-history subjects, contrasting, so far as the remains allow an opinion to be formed, the wild and the domesticated state of various creatures, as the wild and the common ass. Below these, again, seem to have been a series of fish or aquatic animals.

Each bay, or side of the Chapter-house is adorned with an arcade, or row of five small arches, relieved from the wall. As the doorway occupies the western side, there were thus thirty-seven of these spaces; the large pointed window, which fills up the greater portion of the upper wall, rising at a higher level. Upwards of a hundred distinct subjects were originally portrayed in these arcades, of more than half of which some traces are yet to be distinguished. Commencing on the left hand as we enter the Chapter-house, we find the legendary story of St. John. In the first picture, the arrest of the saint by the Proconsul of Ephesus, by the order of the Emperor Domitian, is represented. The proconsul wears a large golden crown and a formidable sword, and the apostle is distinguished throughout by a golden nimbus. In the second scene the saint is placed in a cauldron of oil. An attendant is pouring in the liquid with a ladle, and another blows the fire beneath it with a pair of bellows. In the third scene, St. John is shown as having escaped unscathed from the caldron, and his banishment to Patmos is indicated by his figure in a boat, which is being pushed from the shore. There are five figures in this scene, and there were seven in each of the preceding ones. In the fourth picture, the apostle is landed, and left disconsolate on the shore of the island, his companion returning in the vessel. In this scene the curious method of representing successive events in one composition, which Ghiberti has carried to such a remarkable pitch in his famous gates, has been adopted by the painter. The apostle and his companion being shown together in the stern of the boat, and the same figures being again separately represented, as parted from each other after the disembarkation.

In the next arch we enter upon the illustrations of the Book of Revelation, to which these scenes from the legendary life of St. John serve as a prelude or introduction. We are first shown the angel, making known to the apostle the object of his mission. Then St. John is portrayed writing to the seven churches of Asia, which are little stone buildings of a cruciform plan, each with a central tower, surmounted by a spire, and with leaded roofs. In the porch of the north transept of each of these quaint little buildings is displayed the Angel of the Church. In the third compartment is the figure of Christ, with a sword in his mouth, standing in the midst of the seven candlesticks, with the Apostle Galen at His feet. In the fourth, the same figure appears, seated on a throne, surrounded by a rainbow, with seven lamps of fire burning before it. The four Evangelists, and the four-and-twenty elders, with crowns and instruments of music, are represented in worship around. The opening of the seals succeeds, the weeping of the apostle at his inability to read the book being very literally represented. The riders on the white, the red, and the black horses follow,—Death on the pale horse having been unfortunately obliterated. From this part of the story the painting has been destroyed, until we reach the twenty-fourth bay of the arcade, in which the original form of the beast with seven heads and ten horns is faintly discernible. In the twenty-fifth bay there is only one compartment, which represents the Lamb standing on Mount Zion. In the twenty-sixth, also, but one compartment remains, representing the proclamation by the angel as to the fall of Babylon. In the next bay are two compartments, the first showing the two angels, with the sickle and the fan; the second, the seven angels with the seven last plagues. In the twenty-eighth bay is shown the pouring out of the first two vials. Then comes the pouring out of the fourth vial, and the scorching of men with fire. In the thirtieth bay is represented the outpouring of the seventh vial, and the impersonation of the mystic Babylon seated on a scarlet beast. In the thirty-first bay four compartments are discernible, representing the declaration of the angel that Babylon is fallen, the calling forth of the people of God from her plagues, the angel casting a millstone into the sea, and the burning of the harlot with fire. Then follow the marriage of the Lamb; the worshipping of the angel by St. John, who is raised by the former figure; the triumph of Him whose name is called Faithful and True, on a white horse; and the angel calling to the birds of prey. In the thirty-third bay we have the war waged by the Beast, and the kings of the earth, with their armies, against the rider on the white horse; and in the thirty-fourth bay the loosing of Satan. The accurate following of the text, and the minute, realistic detail with which each incident is unmistakeably represented, make this remarkable series of drawings rather a graphic rendering of the Apocalypse than a mere illustration. Nothing appears to have been omitted. Although the fidelity to the text is so close as at times to border on the ludicrous, the earnest, religious aim of the artist is visible throughout. There can be little doubt that when these paintings were fresh and the series uninterrupted a more distinct acquaintance with the account of the wonderful vision would have been gained by a visit to the Chapter-house of Westminster than would have been easily acquired in any other way,—at least, by the laity.

It is on record that one William of Northampton was employed on these paintings, about the middle of the fifteenth century. The style is vigorous and ingenious, and the artist follows his theme verse by verse. An artist of another order, however, has left his mark in the fine eastern arcade, in which were the seats of the Abbot, the Friar, and the Sub-friar, with, probably, those of the Chancellor and the Precentor. They are thought by Mr. G. G. Scott, under whom, as our readers know, the restoration has

* See p. 107.

been effected, to have been decorated by a pupil of Giotto, and two heads are yet to be seen there, not unworthy of the pencil of that famous master himself. We can recall nothing in mural painting finer than one of these heads, which bears a strong resemblance to the noble face of Achilles, where the heralds of Agamemnon are conducting Briseis from his tent, in a well-known *fresco* at Pompeii. The whole of these arcades appear to have been occupied by one grand composition, representing the reign of Christ in heaven. In the central compartment the Lord sits enthroned. His hands are held up, and his side is bared, to show the wounds received at the Crucifixion. Angels hold a veil, or dossel, behind the throne, and others bear the instruments of the passion. The remaining spaces were filled with clouds of cherubim and seraphim, the former represented on the larger scale, and occupying the most important positions. They have each six wings; two shadowing the face, two expanded for flight, and two veiling the feet. The prevailing colour of the wings is blue, which is that attributed to this exalted order of intelligences. The feathers are ocellated, like those of the peacock—the artist's version of "full of eyes, within and without." One holds a crown in each hand; one a crown in one hand, and the "written stone" in the other. On the feathers of the wings of one of the cherubim are written the names of Christian virtues—not the cardinal, religious, and moral virtues, but certain qualities of religious excellence. Such are—*Officii sincera plenitudo; voluntatis discretio; simplex et pura intentio, munditia carnis; puritas mentis; confessio; satisfactio; caritas; eleemosina; orationis devotio; simplicitas, humilitas, fidelitas.* In the outer niches are smaller cherubic figures, with faces expressive of sorrow, regarding the wounds of Christ. In the background above and foreground below, are a multitude of seraphim, distinguished by the colour red. All the figures have gilt *nimbi*.

It only remains to notice the three arcades in the south-eastern group, painted by another hand, and probably at a later date. The grouping of the figures here gives the idea of multitude, and is thought to illustrate the suffrages of the *Te Deum*—the goodly fellowship of the Prophets, the glorious company of the Apostles, and the noble army of Martyrs praising God. Some of the faces here are thought to be portraits.*

ON THE CONSTRUCTION AND ARRANGEMENT OF BREWERIES AND MALTINGS.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THIS was the title of the paper read on Monday night last, by Mr. George Scamell, jun., of whose work on the subject we gave an account some time ago. Its importance is shown by the estimates lately prepared by Professor Leoni Levi for Mr. Bass, that the capital invested in breweries and maltings, &c., in the United Kingdom, amounts to 12,400,000*l.*, and that the total number of persons employed in the trade is 246,000, or, including the retail trade, 846,000. The number of breweries being worked now being nearly 4,500, and the quantity of malt annually consumed now amounting to 6,250,000 quarters; the total annual income to the revenue of the country from licenses for brewing, malting, and the duty upon malt, being upwards of 6,850,000*l.*

After giving a sketch of the method of brewing, the reader proceeded to speak of

General Arrangement.—As far as possible the various utensils should be so placed that the wort may flow from one vessel to another, through the whole process, without pumping, *i.e.*, the mash-tun should command the copper, the copper the hop-back, the hop-back the coolers, and these again should command the fermenting-tuns, cleansing-vessels, &c. Where, however, on account of the great height required by the vessels in a large brewery, the buildings would require to be of great height, it is best to arrange for one pumping; that is, from the hop-back to the coolers. Occasionally the copper is placed at the top of the building; then the raw wort has to be pumped up from the under back. The majority of brewers, however, object to pumping raw wort, as it is urged that the wort is injured by being subjected to the action of the pump before being boiled.

A perfectly level site is not as a rule to be selected, as by taking advantage of any natural fall of the ground, even in a large brewery, the vessels may be placed so as to command each other without carrying the buildings to any undue height.

After the selection of the site, the next point to be considered is the position of the well. The proper selection of this place is most important, as the well should be so placed and constructed that there is no possibility of any sewage or deleterious matter leaking in, as in such a case most serious injury would result to the beer brewed from such contaminated water. It should also be convenient for driving the pumps from the engine. The site generally should also be thoroughly well drained, all the drains being of rather larger capacity than would suffice for ordinary buildings, and laid to a sharp fall, as a good deal of stale yeast and brewing refuse will find its way into them when washing out the various utensils, and if there is not a good fall, the yeast, from its peculiar nature, is liable to adhere to the pipes, and cause a great amount of inconvenience: this is a point that should be well attended to.

These preliminaries being settled, we will now pass on to the consideration of the brewery. For a large establishment, as a general rule it is best to divide it into three grand divisions, the first containing the mash-tun, and the accompanying utensils, hop and malt stores, &c.; the second division, which we will call the copper-house, containing the wort-coppers, boilers, hop-back, and under-back; the third division, the fermenting-tuns, which we will call the tun-room: all these divisions should be so situated that either division can be enlarged without altering the general arrangement.

In the first division the following vessels will have to be situated,—the cold-water tanks,—and which the majority of brewers prefer to have under cover. These tanks are generally of iron, and it is a great advantage to have them lined with white glazed tiles; if this be decided upon, the tank-plates should be cast with chequers on to form a key for the cement: if the tanks are under cover, and not exposed to the extreme variations of temperature, the expansion or contraction is not found to loosen the tiles. The underside of all iron tanks should be boarded, as if not the moisture in the atmosphere condenses, and the continual dripping is a constant source of annoyance, besides causing damage if any malt or hops happen to be stored beneath.

A vessel will have to be provided for heating the water for mashing. It should contain sufficient water for the whole brewing, and is generally best made of wrought iron, the water being heated by a steam coil. In some instances, where expense is not a great object, these vessels are made of copper.

The malt-rolls for crushing the malt vary in size from 6 in. to 18 in. in diameter, and from a few inches to 3 ft. in length, according to the quantity of malt to be crushed per hour. Space will be required over them for a hopper for containing the malt to be crushed, and a screen for screening the same. They should be situated so as to be convenient for driving from the steam engine; but the opinion of the brewer must be taken as to their position with regard to the grist case, as some prefer to have the rolls fixed directly over the case, and grind into it, whilst others prefer to have the rolls some little distance, and allow the ground malt or "grist" to be conveyed into the case by means of an elevation or Archimedian screw, thus giving the grist an opportunity to cool, as the temperature is considerably raised by being ground. The same description of elevators or screws may be used with advantage for moving whole grain. We next come to the grist cases, or receptacle for the ground malt. They are made of wood or wrought iron, in which case they should be flush riveted on the inside, as the least obstruction will hinder the flow of grist. But, on the whole, I prefer a case made of thoroughly well-seasoned deal, as grist runs so much more freely on that than on any other substance. The stuff from which the case is made should be particularly well seasoned, and should be ploughed and tongued, as it is a difficult matter to keep the joints tight, the malt-dust blowing through the slightest crack almost as readily as water would. The angle of the bottom should not be less than 45°, the capacity should be sufficient to admit of it containing the whole quantity of malt to be mashed, allowing 12 cubic feet per quarter, with a sufficient margin so as not to necessitate any levelling or trimming by hand. The weight of a quarter may be reckoned at about 3 cwt. Occasionally they are preferred made to hold double the quantity of the mash-tun, fitted with a division so as to enable two days' supply to be ground. The outlet will have to be arranged according to the description of mashing machine which may be decided upon. If an external one, then there must only be one opening. If, however, the grist is to fall into the tun direct, then two or four are best, so as to admit of the grist being pretty equally distributed in the tun. In this instance the outlets should be fitted with slides so arranged that they are all opened at the same time by one wheel or handle. The mash-tuns are generally constructed of wood, though occasionally of iron; if so the girders should be as rigid as possible, and if an internal machine is to be used, the framing for supporting the tun must be so arranged as not to interfere with the gearing for driving such machine.

We will next consider the second grand division, viz., the copper-house. The utensils that should be grouped together in this division are those from which a large amount of steam is given off, comprising the under-back, coppers, hop-back, and steam boilers; by keeping these vessels in a distinct house, the brewery may be kept comparatively free of steam. The under-back is a small vessel, and does not often require to hold more than from seven to ten barrels, and is used for running the wort into before it enters the coppers. It should be placed as near as possible to the mash-tun, and should be ready of access and in a good light, as the brewer in charge will require to get to it continually to watch the taps whilst the wort is running from the mash-tun: it should be so situated as to allow of the wort flowing into the boiling-copper. The boiling in some establishments is effected by fire, in others by steam: this point must be decided by the brewer, who also must decide as to the greatest quantity required to be boiled at one time, as it is very rarely the case that the whole of the brewing is boiled at once. The usual allowance as to the capacity of a copper is that the copper should hold one-third more than the quantity to be boiled, to allow for the ebullition. The coppers should under any circumstances be kept as far as possible from the tun-room wall, as if contiguous the heat given off when boiling will seriously affect the temperature of the tun-room; they should be high enough to command the hop-back, allowing a good fall for the main for connecting to the same; there should also be a ready way of conveying the hops from the hop-loft. The setting of the wort-coppers should also be closely attended to; if in London, some description of smoke-consuming furnace must be adopted: if so, the patentee or maker of the selected furnace will give the size of that particular furnace suitable for the size of copper. If an ordinary furnace is to be erected, then for a copper the bottom of which is 7 ft. diameter, a furnace the bars of which are 4 ft. long by 3 ft. 3 in. is sufficient; or for a copper 5 ft. 6 in. diameter, then if the bars are 3 ft. long by 2 ft. 6 in. wide, and so in proportion for other sized coppers. The flues must finish, or, as it is termed, be *safed* in, so that the top of the flue is just below the level of the least quantity of wort required to be boiled at one time. All flues must be lined with fire-brick, set in fire-clay; such linings should not be incorporated with the settings, but an air space of 2 in. or 3 in. left between, being merely connected with the body of the work by a few headers here and there.

The crown of all boilers should be covered with some non-conductor to prevent the heat radiating, but most certainly not with brickwork, as under such circumstances, if any leakage take place round the manhole or safety-valves it may not be detected until the boiler is seriously injured. Provision must be made for getting into the flues for cleaning out or for examining the boiler; a drain must also be provided in front of boiler for conveying the waste water when blowing off. For all practical purposes the chimney-shaft need never exceed 75 ft. in height from the furnace-bars; and in designing a shaft should always be borne in mind the possibility of an additional copper or boiler being erected; therefore the area of the shaft should be rather larger than absolutely necessary for the present requirement. Mr. Rawlinson recommends for a tall chimney-shaft, that the shaft be carried up square with an internal circular lining of fire-brick, thus leaving spaces at the corners for air spaces; these spaces will

* A view of the entrance to the Chapter-house from the cloisters, and various other illustrations and descriptions of this part of the Abbey buildings, will be found in our earlier volumes.

tend to keep the external work cool, and it will not be so liable to split. This is no doubt an excellent arrangement for massive chimneys, but for shafts of ordinary dimensions it is scarcely necessary to go to this additional expense; all that is necessary is to line the bottom of the shaft, and about 12 ft. or 15 ft. of the top, with fine brick. The area of the outlet at top of shaft may be found by multiplying the number of pounds of coal consumed per hour by 12, and dividing the product by the square root of the height of chimney in feet, the result being the area of the top of the chimney in square inches. For a circular shaft the diameter at base should not be less than one-tenth of the height; the thickness of the work should not be less than one brick for the first 25 ft., and increasing by one-half a brick for every additional 25 ft. At the base of the chimney should be an iron door, to allow for removing the soot, and it is a great advantage to cause the flues to enter the shaft a few feet from the bottom, so as to form a receptacle for the soot without interfering with the flues. Where sugar is used for brewing from, it is convenient to have a separate vessel fitted with a steam pipe, for dissolving the sugar in before it enters the copper; this vessel should be placed as close as possible to the coppers, and can be made of wood or wrought iron.

There should be abundance of ventilation in the copper-house, both in the side walls and also in the roof. The openings in the walls should be so arranged that a copper or boiler can be easily removed and replaced, it always being a great advantage, indeed, almost absolutely necessary, that such utensils should be taken in whole.

The fermenting-tun rooms were then described, and the vats sometimes required for storing beer.

Mr. Scamell said he had found that the cost of building a brewery will range from 2d. to 6d. per cubic foot. A 63-quarter brewery and malting, costing about 12,000*l.*, costs about 2d. A 24-quarter brewery, brick built, cost 3,600*l.*, or 4¼d. per foot. The buildings for a 100-quarter brewery carried up in stone, not including the tun-room, cost about 5,400*l.*, or 5¼d. per foot. A 40-quarter brewery of brick, with a considerable amount of moulded brick dressings, &c., 3,700*l.*, or 6d. per foot. The total cost, including the plant for the 63-quarter brewery, and a 70-quarter malting, cost about 20,000*l.*, or the 24-quarter total cost 6,300*l.*, or 262*l.* per quarter. The 40-quarter brewery complete cost about 8,900*l.*, or 225*l.* per quarter. The 100-quarter without tun-rooms would cost about 9,600*l.*, or say 100*l.* per quarter. The 24-quarter, 7,700*l.*, or 320*l.* per quarter. These amounts do not include the cooperage department. Now, as a rule, a brewery cooperage is only required for repairing, not making, casks, and should therefore be of a greater width than a shop where casks are to be made; about 20 ft. in width will be a very convenient shop. Each man will require to have a wood block, and an iron plate let into the floor for placing the casks on, when driving the hoops, and one or two commodious firing-places for firing the casks in; these should be about 6 ft. or 8 ft. square, and covered with an iron hood, having an outlet of not less than 2 ft. square at the apex; the floors should either be of oak plank or wood blocks, as ordinary street pavement; the hearths of the firing-places may be paved with brick on edge, as they stand the heat better than any other description of pavement. Over the shops should be a good loft for the storage of flags and hoops.

After treating of the construction of maltings, the reader urged that architects engaged on such works should get the views of the proprietor very clearly expressed in writing, as to the system upon which the brewing is to be conducted: in general it is a difficult matter to get definite instructions as to the many points of detail, and it is always advisable to get the brewer's authority in writing, confirming any particular form of apparatus which may be proposed to be introduced, and it is as well to get the views of the gentlemen who may have to work the plant, as thereby many a hint may be obtained as to small matters of detail, which would otherwise be overlooked until the deficiencies were found out when commencing to work the plant, thereby causing a long bill of extras to the dissatisfaction of all parties.

Market, Newton Abbot.—A commodious market has just been erected at Newton Abbot, Devonshire, at a cost of 17,000*l.*

LAND.*

HAVING referred to the theory of the confiscation of all improved value of land, and to the doctrine that the State may resume all land into its possession, I will now refer to a clever essay which has recently appeared as one of the Cobden Club Essays,—"The Present Aspect of the Land Question," by William Fowler, M.P., 1872.†

The essayist maintains that, although all property is sacred, the present tenure and mode of possession are so unfavourable to its productiveness, that Parliament should intervene; but the essayist altogether omits to notice the legislation and the improvements effected within the last twenty years. Concurring with the essayist to a considerable extent, I propose to, partially, supplement his essay by noticing such legislation and improvements.

The essayist writes,—"The largest landed estates in the kingdom, the Bedford, Northumberland, Westminster estates, and those of the Earl of Leicester,—though in great part settled on tenants for life, are thoroughly well handled. But the question is, are they not exceptional?" And, in order to clench the argument, the essayist quotes Mr. Caird's "Agriculture in 1850." If he had quoted Mr. Caird's statement in 1850, that "at no former period has the general progress of agricultural improvement been greater than at present,—on every side increased exertions are being made by both landlord and tenant," Mr. Caird's observations would have been properly appreciated; and arguments founded upon the *then* state of agriculture would have been obviously inapplicable to its state after the lapse of twenty years.

Wages were, for instance, stated by Mr. Caird at an average of 9s. 7d. in 1850, against 7s. 3d. in 1770. The average wages of the same counties were, according to the last Parliamentary returns, 13s. in the year 1870. Their rate at the present moment is still higher, and there is a demand for labour which it seems impossible to satisfy. The practical abrogation of the law of settlement in 1865 emancipated labour, and enabled it to flow freely throughout the country. The essayist makes no reference to this fundamental change.

Good cottages follow good wages and difficulty in finding a supply of labour. The best-managed estates have the best cottages. The cottages will never be built unless they pay fair interest; and the source of that interest must come, and in many cases already does come, from the increased produce of the land. I have been entrusted with the building of many cottages yearly for many years, and they all pay interest; but, where the land has not been well farmed, their cost may be part of the expenditure necessary to secure a good tenant.

The essayist maintains that we want "men to buy land in order to make a living out of it, and not men who buy it as a luxury, and can be satisfied with 2 per cent. interest." Admitting that great estates are now frequently sold in lots, the essayist says "that no one would bid against a rich man intending to buy the whole," and "that such a purchaser would not be likely to spend money in improvements."

My experience is that "a man wanting to make a living out of land," sells whatever freehold land he possesses, and becomes tenant with the capital so acquired. This seems natural and wise. The sum of 4,000*l.* can provide 400*l.* a year for the tenant of 500 acres of land, while as landowner his income is but 120*l.* a year. The question to him is whether he will be landowner with his capital producing 3 per cent., or tenant with his capital producing 10 per cent.

An estate is not, it seems, to be sold in the dearest market,—possibly to a purchaser who is willing to give fifty years' purchase, — nor is the property to be sold, as it is frequently offered, in lots, so as to afford an opportunity to the speculator who desires to resell, or to the adjacent landowner desiring to buy it, but it is to be sold only to some one desiring to purchase "in order to make a living out of it." This kind of purchaser must, surely, soon be at the limit of his capital. The man who will take 2 per cent. on his capital is, on the other hand, not likely to have invested the whole of it in his purchase; and if his tenant will pay him 5 or 6 per cent. on money spent in draining, or buildings, or improvements, he may after all get 3 per cent. or more on the whole capital expended.

The existence of tenant farmers, with both capital and intelligence, seems to be altogether ignored; and the tenant is viewed as without either the one or the other if he does not "buy land in order to make a living out of it." We have seen why a man of intelligence, with 4,000*l.* of capital, should be a tenant rather than a landowner, and, as a matter of fact, such is the course generally adopted. According to the last agricultural returns, the farms exceeding 100 acres occupy 20,000,000 acres, or 65 per cent. of the whole acreage of cultivated land included in the last year's official returns. No one acquainted with the occupation of land throughout England for forty years can fail to recognise the result of the more liberal education given by farmers to their children, which has prevailed during the latter part of the period. The only practicable mode of increasing materially the produce of the land is to apply to it both capital and intelligence in the forms of machinery and management.

The problem yet to be solved is mainly how to counteract the uncertainty of the seasons. We admit that it is right to guard against contagious diseases and against preventible sickness, and we drain our land to carry off the superfluous water. We want to be able to go on our farms for the autumn and spring ploughings just in those few days of fine weather which there are in the worst years; and we want to harvest our corn in the few fine days in which the worst harvest season always comprises; and we want that the land shall not be poached by the treading of horses; and that the cost of cultivating clay lands—the old wheat lands—shall be reduced.

And steam ploughs and agricultural machinery promise us all this; and, as far as they have gone, have fulfilled their promises. But small farms and small fields cannot co-exist with steam cultivation. In almost every other form of production we have availed ourselves of steam power, and in all steam power, once introduced, has effected the desired results, and occasioned in the long-run the employment of a larger amount of labour. In farming, where steam power is introduced, a greater amount of labour is employed, and it is of a more intelligent kind; the compensation to the employer is found in the greater amount of the produce and the greater certainty of its production.

The essayist states, as an actual fact, that the value of lands in mortmain is one-sixth of the real property of the kingdom, and worth 500,000,000*l.* of money. The real fact is, that there is now very little land truly in mortmain in the country. The Settled Estates Act, the Church Enfranchisement Acts, the Glebe Sales Acts, the Universities Acts, the Charities Acts, have afforded means for the sale of almost every corporate property. No reference whatever to these enabling Acts is made throughout this essay, and a total want of knowledge of some of them has been frankly admitted. As regards nearly all the estates formerly in mortmain and all the settled estates, the question of their retention or of their sale is only a question of expediency. There is no legal impossibility.

The essayist states that he has recently discovered an instance where the poor of a parish in Lincolnshire hold land worth 700*l.* an acre, from which they receive an annual return of some 2*l.* or 2*l.* 10s. an acre. A little further research will enable him to discover the Charity Commission, where the facts relating to this land must be registered; and the invocation of its authority will enable the sale of the land, and the yearly return of 23*l.* an acre to be received, instead of 2*l.* or 2*l.* 10s. This kind of difficulty has been obviated for the last eighteen years.

According to the essayist's personal opinion,—and his opinion is very valuable on this point,—the annual savings of the kingdom amount to 150,000,000*l.* a year. Yet he is of opinion that all corporate estates should be sold and converted into money. The incomes of corporations having generally specific appropriations and special claims to discharge, it is of the utmost importance that the recipients should throughout the future obtain not nominal, but real income. We are all familiar with the difference between reserved rents, which were real rents 300 years since, and the present rental of estates. The colleges, on Cecil's advice, reserved one-third of their rents in corn; and they have, for this third, always continued to receive substantial revenue. The suggestion now made is that the fee-simple value

* By Mr. Edmund James Smith, member. Read at the Ordinary General Meeting of the Institution of Surveyors, January 29th. See p. 80, *ante*.

† The first edition contains observations on the Ecclesiastical Commission, which, being confessedly unfounded, are to be omitted in the next edition.

of corporate real property (which must rise as money falls in value) shall be placed in the public Funds,—in other words, be lent out for ever to the Government,—and thus be limited to a definite revenue, which can never be exceeded (but may be decreased by the discharge of the debt or the reduction of the rate of interest paid), and which must bear a constantly decreasing proportion to the whole revenue of the kingdom.

Mortmain has had one good use. It has enabled us to trace for 300 years the annual value of precisely the same estate. Properties in mortmain could not vary in extent prior to the passing of the comparatively recent enabling Acts; and we have, therefore, a complete series of valuations of the same properties throughout that period. In purely agricultural districts the rent, where no outlay whatever has been made by the owner, but all improvements have been made by lessees holding long leasehold terms, doubled itself between 1670 and 1770, and increased about fourfold between 1770 and 1870,—about eightfold since 1670.

We have seen that land in the best parts of the City of London is, in 1870, of thirty times its value in 1670.

There would seem to be many reasons why corporations should be the best of all possible owners. A corporation can exercise no political influence (if political influence be not altogether effete), wants no shooting, no game, no interference with the tenant, no change of tenants, and has no financial crisis. A corporation desires a well-farmed estate, with the rents paid regularly, and with fair interest on money invested in improvements in substitution of lying in the Funds at 3 per cent. A corporation can have no objection to grant leases; and its tenants, subject to paying their rents, are practically owners. There are always good-natured friends near every corporation estate, who will transmit to its managers, or to their own Parliamentary acquaintance, any complaints which seem to require, and some which do not require, to be investigated. The corporations are non-resident, I admit; but the tenants are almost of necessity the best kind, many quite equal to the squire of fifty years since.

When the Northumberland Estate, now so admirably managed, was in the worst possible condition (Duke Algernon spent 524,600*l.* on its renovation), the Greenwich Hospital Estate, under the management of John Grey, of Dilston, was the example estate of the kingdom. The Continental strangers who came to inspect our farming were sent, as a matter of course, to Dilston, to view the Greenwich Hospital Estate.

This amount of 524,600*l.* expended in the improvement of a single estate, is a princely amount, and Duke Algernon was only tenant for life; but the Percys have ever been princely people. The expenditure on roads, bridges, &c., was 39,690*l.*; on buildings, cottages, &c., 308,330*l.*; and on draining, 176,580*l.*, making up the total of 524,600*l.*

It may also be suggested that, if new systems are to be adopted, it will be more easy for the State to give them effect on a corporate property than to have to buy land on which to try them. When the leasehold term of a corporation lessee comes to an end, he may be dismissed, under Parliamentary authority, and the farm may be cut up into twenty (or more) tenancies, and twenty new homesteads erected with 25 acres each, and the twenty tenants may be pitted against the one tenant of the adjacent 500 acres. These little occupiers will work under more favourable conditions than if the lands had remained uninclosed and cut up into strips in open fields. But the result is, nevertheless, certain. Intelligence and capital will beat hand labour, and steam cultivation and machinery will prevail.

The most favourable condition of hand labour is the occupation of plots of land in the vicinity of large towns, where vegetables can be grown for the consumption of the town population. The produce, in such a case, reaches 80*l.* an acre annually. The land-owner may receive one-tenth, or one-eighth at the utmost, for rent, and one man off an acre of ground may obtain a return for his skill and labour somewhat exceeding the wages given in the neighbourhood. But the skill and energy necessary to effect this might earn a much better income in the town. The remarkable fact is, not the profit derivable by the individual, but the amount of produce obtainable from one acre of land when manure is readily accessible, and several crops can be raised in the year. It also seems almost impossible to exhaust land long used as garden-ground, the thorough commixture of the soil producing effects obvious for centuries after the land has fallen under ordinary cultivation. No possible amount of hand labour could ever effect such a thorough commixture throughout the whole of our agricultural land, but steam cultivation may effect it.

Our neighbour, France, gives us a warning as to land culture, as in other respects. The law of 1793, compelling the sub-division of land amongst all the children of the parent, has existed somewhat more than two generations. M. Leonce de Lavergne, writing, in 1865, in its favour, tells us that thirty-seven farms which, in 1793, divided between them the 3,500 acres of the commune of Vensat, now belong to 600 owners, with an average estate of less than 6 acres each, and those not lying in one plot. In many departments of France, says M. Monny de Morney, the partition of property has reached less than the fiftieth part of an acre. Imagine the condition of an owner of 3 perches of common field land. In France, of 8,000,000 proprietors, says M. D'Esterno, there are 3,000,000 exempted from personal taxation on the plea of indigence. There are 60,000 possessing 130 acres each on an average, and there are 4,500,000 averaging 12 acres each.

The French law of 1793 places the children of the family as a whole in the position of our eldest sons. That which he would take for himself alone they take amongst them; for the liberty allowed to the parent to dispose of a small portion is practically disused, because its use is generally followed by legal proceedings after his death. The land is thus practically entailed by law on all the children, without the probability, which exists in an entailed estate, of an heir from time to time having the fee simple vested in him; for no such child throughout all time can have more than a life interest. The alternative is to limit the family fecundity wholly to primogeniture.

The sum of the whole matter is this. Restrictions on the use of land are as unwise and injurious to the State as restrictions on trade, and owners and occupiers will find for themselves, under the pressure of public opinion, the best mode of employing their land and their capital without State direction. The abrogation of the laws of settlement leaves labour free. The removal of legal restrictions on sales by corporations or by the owners of settled estates has practically extinguished mortmain. The future of agriculture depends upon machinery, not upon laws. There is no distinction between agricultural and other land. The prime use of land in England is for commercial purposes. The quotation from Mr. Cobden, prefixed to Mr. Fowler's essay, "I believe we have no adequate conception of what the amount of produce might be from a limited surface of land, provided only that the amount of capital were sufficient," embodies the main truth in relation to agriculture.

It is our daily duty to advise on the sale or the purchase or the management of indestructible property, and our first necessity is to train ourselves to a judicial frame of mind, so as to ponder the circumstances of each particular case, and accurately weigh, with the aid of past observation and experience, the advantages, present and future, of a proposed sale or investment. We are, therefore, obliged to extend our views much further than is necessary in the ordinary transactions of trade, where the sale or purchase exhausts its effects in a very brief period. The purchaser who bought the farm at Crewe at a very high agricultural price, because he foresaw that, from the conformation of the country, the property must be intersected by the future great line of railway through that district, did exactly that which each of us aims daily to effect.

I have, therefore, thought that the subject of this paper was fitting for this institution; and I have expressed my views the more boldly because our institution comprises the leading surveyors throughout the whole of England, and their experience will, in the ensuing discussion, point out further supplementary information, and lead to the correction of any erroneous conclusions.

After a few remarks by members, the discussion of the paper was postponed to the next meeting on Monday, February 12th.

The Public Health.—The Queen's Speech contains the following passage:—"There will likewise be laid before you legislative provisions founded on the report of the Sanitary Commission."

WORCESTER SCHOOLS COMPETITION.

MR. DAY writes as follows:—

"SIR,—Observing that you have published Mr. Witherington's protest against my plans for the Worcester schools, I think it necessary to state that my delivery of plans was a legal one, as I have duly explained to the Board; and with regard to your remark as to "the possibility of a favoured competitor being able to see the designs of other competitors before completing his own," I have to observe that no such possibility existed, the plans being all packed and kept in the custody of the Board.

Many other statements made by Mr. Witherington are erroneous; but I have neither the time nor inclination to enter into discussion on these points.

ERNEST A. DAY.

A meeting of the School Board was held on the 1st inst. to consider the protest we printed last week, and according to the published reports Mr. Day ("*De Die*") admitted that his drawings were not delivered until Monday instead of on or before the date prescribed by the advertisement. The School Board came to the resolution "that the Board having heard Mr. Witherington, see no reason to depart from their decision in favour of Mr. Day."

SIR,—I think it possible that some misapprehension may exist in the public mind as to the facts concerning the late decision of the School Board on the architects' plans submitted to its judgment. I shall be obliged if you will allow me the opportunity of stating what the facts are.

In October last the Board advertised, in the Worcester papers, and in the *Builder*, inviting architects to send in designs. The form of advertisement was as follows:—

"TO ARCHITECTS.—The WORCESTER SCHOOL BOARD are desirous of receiving PLANS for a BLOCK of SCHOOL-ROOMS, giving accommodation for 200 boys, 200 girls, and 300 infants, with class-rooms, lavatories, and all suitable offices, with dwarf boundary-walls, iron palisades, gates, &c. In preparing their plans, architects are requested to combine economy with efficiency. The architect whose plans are approved will superintend the works on the usual terms. The second-best plan will receive a premium of 30*l.* The ground being somewhat irregular, the site should be seen before plans are prepared. Plans are to be sent in on or before the 30th of November, to Mr. MARCUS, Clerk of the Board, of whom any information may be obtained."

Several architects having written to the clerk to state that the time allowed was insufficient, the Board resolved to extend it to the 31st of December, and a further advertisement was inserted in the same papers to this effect:—

"TO ARCHITECTS.—EXTENSION of TIME.—The TIME allowed to Architects to send in PLANS for the ERECTION of SCHOOL BUILDINGS, as advertised in 'The Builder' of October 28th, is EXTENDED, by order of the Board, from NOVEMBER 30th to DECEMBER 31st, 1871.—F. MARCUS, Clerk to the Worcester School Board."

At the time when this extension was granted, it was quite overlooked that the 31st of December, 1871, fell on a Sunday; nor was this remembered till it was too late to remedy the mistake.

Under such circumstances some diversity of opinion would naturally arise whether Saturday, the 30th December, or Monday, January 1st, was the ultimate day on which plans could be received. There is no express law on the point, and I think a good deal might be urged for either side of the question. As a fact, the competitors in this case took different views. Some sent their drawings on the Saturday; several sent theirs on the Monday, accompanying them with a letter stating that, as the day fixed fell on a Sunday, it was conceived that they complied with the terms of the advertisement by sending on the Monday following.

On Wednesday, the 27th of December, Mr. Witherington, sen., sent a youth (who is, I believe, employed by him) to Mr. Marcus, the clerk of the Board, inquiring, on behalf of his son, what was the latest day for sending in plans, as the 31st fell on a Sunday, and there were conscientious scruples as to sending on that day. The answer of Mr. Marcus was that he could not go beyond the words of the advertisement, which Mr. Witherington must construe for himself, but that he (Mr. Marcus) would not urge the rejection of any plan if there were any conscientious scruples regarding the 31st. No other communication on this subject passed between Mr. Marcus and Mr. Witherington; nor did Mr. Marcus, either on that occasion or any other, say that "plans must be delivered before the 31st of December."

On Saturday, the 30th, a messenger from Mr. Witherington called at the Guildhall, told the hall-keeper that he had to bring something for the School-board, and asked at what hour it must be delivered. The hall-keeper replied that it had better be left by five o'clock, as he might be absent at a later hour. Nothing was said as to the "something" being plans for the Board schools, nor had the hall-keeper any authority to speak, nor any knowledge to enable him to speak, nor as a fact did he speak, on such a matter. The Guildhall was not named in the advertisement, which directed plans should "be sent to Mr. Marcus, clerk to the Board." There is consequently no foundation for the idea that Mr. W. S. Witherington was told that he must send in his plans by five o'clock on Saturday, the 30th. The choice of the day was his own.

It is now complained that Mr. Day, on the contrary, chose the Monday; but there is no more ground for complaint against him in this respect than there is against the other competitors who sent on that day; nor in my opinion is there ground for complaint against any of them. It was a point on which a difference of opinion might fairly exist, and none can doubt that those who sent on Monday did so *bona fide*, and in an open way.

All the plans were kept in the custody of Mr. Marcus, sealed as he received them, until the Wednesday morning, when they were opened in his presence and under his inspection in the north room of the Guildhall, in which room they were all seen by the Board before the admission of any other person.

I have confined myself strictly to a statement of facts, and those facts I have verified by a personal examination of the witnesses thereto. G. W. HASTINGS.

HANLEY PUBLIC BATHS: COMPETITION.

OUT of thirty-one designs submitted, twelve were in the first instance selected by the Committee, and were then reduced to four,—those of "Mark Well," "Bono Populi," "A Competitor," and "Well considered." In presenting these, the Committee recommended the plans of "Mark Well" for the first premium of 30*l.*, and those of "A Competitor" for the second premium of 20*l.*

Mr. Miller raised the point that neither of the plans could be carried out for the stipulated sum.

Mr. Cartledge said that the Committee had adopted "Mark Well's" plans as the cheapest and best exhibited.

The members having inspected the four sets of plans, and heard the remarks thereon of the surveyor (Mr. Lobley), Alderman Ridgway moved that the first premium be awarded to "Mark Well."

The motion having been seconded, Mr. Miller moved as an amendment that, before awarding the premiums, means should be taken to obtain tenders for the execution of the designs.

Mr. Hampton seconded the amendment.

The amendment, being put, was negatived. The motion was then carried.

On the motion of Mr. Alderman Ridgway, the second premium of 20*l.* was awarded to "A Competitor."

The sealed envelopes accompanying the prize plans were then opened, and it was found that the first premium had been awarded to Mr. R. Dain, Hanley; and the second to Mr. Charles Lynam, Stoke, both local architects.

THE LEICESTER MUNICIPAL BUILDINGS COMPETITION.

IF the information we receive from the spot be correct, we are not likely to hear anything satisfactory as to the proposed municipal buildings there for some time: the matter is quietly shelved for probably a year or two, until the old cattle-market is removed, when the question will be re-opened, and eventually the erection will be made on this site, and not the Friar-lane site.

Corporations, committees, Government, forget the obligations, moral and legal, they are under to the architects who respond to their offers in such cases.

EXAMINERS ON STANDING ORDERS.

UP to the eve of the opening of Parliament, Messrs. Frere and Robinson, the examiners, had got to No. 217 on the list of private Bills, which number 304 in all. Some of the Bills called, however, have been passed on to a future day for consideration.

Among the Bills that have been passed during the week affecting metropolitan communications is the South Kensington Railway Bill, in connexion with which Standing Orders are declared to have been complied with. This Bill is for a railway 4 furlongs 3 chains in length, commencing on the south side of the South Kensington station of the Metropolitan and Metropolitan District Railway, and terminating on the eastern side of the building which unites the Royal Albert Hall with the conservatory of the Royal Horticultural Society, in the parish of St. Margaret, Westminster. The land scheduled for this short line only amounts to two roods. The works will include 28,000 cubic yards of earthwork in soft soil, at 5s. per yard, 7,000*l.*; a viaduct or girder bridge, 2,000*l.*; culverts and drains, 500*l.*; covered way, 13,000*l.*; permanent way, 1,620*l.*, being at the rate of 3,000*l.* per mile; stations, 11,500*l.* These, with a few other items, and 10 per cent. for contingencies, make up a total of 45,000*l.* for the little more than half a mile of line. Plans were lodged on the 30th November for a competing scheme, under the designation of the Exhibition Subway. This project appears to have been abandoned, but the Temple Subway Bill, for a connexion between the Victoria Embankment and Lambeth, under the Thames, has passed Standing Orders. It will probably be time enough to project additional subways when the capital has been raised and the works executed in connexion with the City and Southwark Subway, already authorised, and with the Temple Subway, to make which, powers are now petititoned for. Powers are taken in the South Kensington Bill to underpin houses and buildings within 100 ft. of the proposed railway. Lord George Gordon Lennox, Mr. Richard Baxter, and Mr. Alfred Rhodes Bristow are the first directors named in the Bill. Mr. Rammell is the engineer.

Of Bills relating to London some have been withdrawn, abandoned, dropped, have not paid the deposit, or from whatever cause have not had any one to answer for them when they have been called by the Examiner. Among these are the Metropolitan and Wimbledon Line from West Brompton to Barnes, which lodged its plans, copy of Bill, and complied with various other Standing Orders, but has passed for all this into the limbo of dead infants. Another unanswered call was that upon the promoters of the London and South-Western and London Chatham and Dover Railways Junction Railway Bill, for a working junction between Waterloo and Blackfriars stations. It was supposed that the Holborn Viaduct Station, the works at which have been commenced, would give an impetus to this project, but the junction will not be made for yet awhile. It has been stated by a contemporary, usually well informed, that "the plans have now been fully agreed upon" for the Holborn Viaduct Station. It is curious that the engineers for the erection of the station know of no "fully agreed upon" plans, although it is true that the works are in active progress.

Among the Bills that have passed Standing Orders unchallenged is the London Street Tramways (Extensions, &c.), for the construction of tramways in Oxford-street, Holborn, and other principal thoroughfares. The opposition to this scheme is doubtless reserved for the committee or probably for the House, which threw out the same Bill last session.

The International Communication Scheme (Mr. Fowler's ferry) has passed Standing Orders, but the Continental Communication Bill (Newhaven and Dieppe) has been postponed to the 21st February.

SOCIETY OF FEMALE ARTISTS.

THE exhibition, in Conduit-street, of works by members of this society, now open, includes 316 pictures in water-colours and 105 oil paintings. Amongst them are works by artists who have gained a position, backing up their less experienced sisters, who find here, by the exhibition of their works, incentive to further effort. Thus Mrs. E. M. Ward sends a picture of mark entitled "The Tower, ay, the Tower," No. 321 (two of her daughters, by the way, Miss Flora Ward and Miss Eva Ward, are following promisingly in their parents' footsteps); Mrs. Benham Hay, "The Prodigal Son" (350), a very meritorious work; Miss Louisa Starr, a powerfully-painted "Portrait of Mr. Frederick Marrable" (354); Miss Louisa Burgess Swift, a very elegant "portrait" of a lady (337), with other pictures; and Madame Jerichau "Penserosa" (387), and "Danish Fishermen."

Amongst the water-colour drawings, Mrs. Marrable's contributions make a considerable show; "The Old Yew-tree Walk, Clifden, Maidenhead" (81), is especially noticeable. Miss Marian Croft's landscapes have considerable beauty, but exhibit the too free use of body-colour. "Eaton College" (63) and "Bridge-street, Chester" (71), both by Louise Rayner, would "hold their own" in any exhibition. Miss Julia Pocock is in strength, and we have marked "Evening" (28), by Miss S. S. Warren; "Calculations" (74), by Miss Partridge; Miss Gastineau's "Near Ventnor" (100); Lady Duckett's "Sparrows and Barberries" (108); "Joan of Arc" (109), by Miss H. Thornycroft; "Mignon" (126), by A. L.; and, with an extra tick, "Early Frost" (211), by Madame C. Bisschop,—a charming work.

THE PEABODY FUND.

THE annual statement of the trustees for 1871 has been published. First Trust.—Under this trust, five groups of buildings—at Spitalfields, Islington, Shadwell, Westminster, and Chelsea,—have been erected, affording accommodation, collectively, to nearly 600 families; and the trustees also possess a site at Bermondsey, on which they contemplate building. The accrued rents and investments of this trust, after deducting its administrative expenses, amounted, at the close of the past year, to 32,922*l.* 18s. 3d. This sum, added to the original fund of 150,000*l.*, makes the property of this trust now amount to 182,922*l.* 18s. 3d. Second Trust.—The second donation of Mr. Peabody, to the amount of 200,000*l.*, became available for building purposes in 1869, and to this sum will be added, in 1873, in accordance with Mr. Peabody's bequest, a further sum of 150,000*l.* Out of this fund were purchased the site at Chelsea, and the Magdalen Hospital estate at Blackfriars-road. On the last-named property, the buildings were completed in August last, affording tenements to 300 families, for which applications were and continue to be largely in excess of the accommodation available. Profiting by experience, the trustees have introduced into these dwellings a new style and system of construction, affording, at less outlay and without increased rents, greater comforts and conveniences to the tenants, than in the buildings previously erected. The following is the financial statement of the second trust to the 31st of December, 1871: Debit.—Amount as per last report, 213,918*l.* 1s. 7d.; interest and rents since received, 7,305*l.* 12s. 2d.; less expenses of management, 238*l.* 3s. 2d., leaving 7,067*l.* 9s.; total, 220,985*l.* 10s. 7d. Credit.—Land and buildings, 73,770*l.* 9s. 7d.; investments, 141,198*l.* 1s. 11d.; cash at Bank of England, 6,010*l.* 15s. 11d.; ditto in hand, 6*l.* 3s. 2d.; total, 220,985*l.* 10s. 7d.

STATUE OF THE LATE EARL OF DERBY.

THE members of the Junior Carlton Club may congratulate themselves on possession of the statue of the late Lord Derby, which has been executed for them by Mr. Theed for the amount of their comparatively small subscription,—about 700*l.* It is a *replica* of the statue lately placed in St. George's Hall, Liverpool, of "heroic size," an excellent likeness, dignified and vigorous. The costume, the robes belonging to the Order of the Garter, is very elaborate, and is worked with extreme care and skill. By great good luck, too, the marble, so far as the front view is concerned, and which is alone of any consequence in the position the statue is to occupy in the inner hall of the club, is nearly spotless. In short, it is a very successful and admirable work.

A WORD OF A SORT WITH OXFORD.

OXFORD is celebrated for her University. She has been celebrated for that several centuries; but why has her "matter in the wrong place" never been mentioned? She can say without contradiction, "I not only have the finest and the greatest number of schools, but I have the finest and the largest quantity of mud, of any town or city in Europe." The tourist who visits this seat of learning is as much impressed with one characteristic as with the other; and if he desires to bear away a memento of his visit, there is nothing like Oxford clay. There is another memento he will be certain to take, against his will,—catarrh and every other complaint that marsh, bog, fen, mud, slush, puddle, stagnant water, and cesspool can give him, to say nothing of fever and small-pox. On the east, south, and west sides of Oxford there are thousands of acres of water waiting to moisten the throat of Phœbus, and a great deal of this water is above the level of the city: consequently it is, with the present system of doing it, impossible to drain the streets. The most surprising thing is, that these pestilential floods are encouraged. What for? "Tell it not in Gath!" That there may be safe skating for the collegians. Hundreds of (perhaps valuable) lives are thereby sacrificed. Compare the toleration and encouragement of these floods and all their attendant evils with one of the coolest acts of Vandalism ever perpetrated. The most attractive feature in High-street was the noble row of elm-trees in front of Magdalen College. To the everlasting disgrace of Oxford, the delightfully umbrageous and picturesque productions of ages have been shorn, lopped, and decapitated, till nothing but the trunks remain, and all this has been done lest one of the branches should blow off, and make some nervous old lady scream. Death may steal in and carry off its hundreds of victims; but it must not bodily snatch off a victim indiscreet enough to walk on the shady side of the street in windy weather. Aquarius may have its victims, but not Boreas. If there are any who read this so unsophisticated as to ask, "If Oxford is situated in a marsh, how is she to avoid superfluous water?" let such see what has been done at the sister University and in the fens of Lincolnshire, Cambridgeshire, and Norfolk, ages since.

On that side of the city where the denizens need not be amphibious, a new and well-built town is springing up,—ay, and with giant strides, too; and, to judge by the style and build, both architects and builders have secured the goose that lays the golden eggs. New premises, works, and houses testify that the scores of London contractors to whom quantities have long been strangers might look in upon the University with advantage to themselves. They will only have to pay their workmen the same wages the grandsires of the latter received; and the houses they build will let well before they are completed, so anxious are people to find a dry spot.

The authorities have been dreaming about some kind of sewerage for two or three decades. Their forefathers who founded and built the University were not "of such stuff," and unthinkingly fixed upon the worst site they could have found in England; still, as it cannot be dreamed off the site, it behoves the present generation to do what they can to make it fit for creatures superior to water-rats, newts, and vampires.

GARGOYLE.

SOME NOTES FROM DUBLIN.

A NUMEROUSLY signed memorial was brought before the Public Health Committee, praying for the suppression of the scavenging department kept by the corporation at Blackpitts, a poor and overcrowded locality of the city. A resolution was passed, requesting No. 1 Committee to take immediate steps in abating the nuisance.

The suppression of a similar nuisance was prayed for, existing on the north side of the city, on the banks of the Royal Canal. Scavenging stuff is likewise here deposited for the purpose of shipment.

The Under-Secretary has replied that the Government cannot sanction the appropriation of the old prison at Grangegorman for the purpose of a convalescent house for small-pox patients, on their discharge from hospital. Other buildings can be procured quite as suitable in Dublin.

The Club-house Green—a pleasant green plateau near Kingston Harbour—will not now be appropriated for the purpose intended, that of building storehouses. The Lord-Lieutenant is understood to have personally interested himself in the matter. So the Royal Irish Yacht Club, and the visitors and residents of the marine watering-place, will have their little oasis of grass preserved.

The Dublin Bridges and Quay Walls Bill is meeting a very strong opposition, and it is very doubtful if it will ever become law. The country gentry and ratepayers held a meeting convened by the High Sheriff at the Court-house, Kilmainham, for the purpose of protesting against the Bill. By the provisions of the Bill, the county would be included in the area of taxation for the maintenance, rebuilding, and repair of the Dublin bridges and quay walls. All the speakers severely criticised the Bill, and the conduct of the corporation, thinking that it would be a great misfortune for the county if the control of its finance were handed over to the corporation of the city. Lord Talbot de Malahide said, in the course of his remarks,—

"I admit that I have a considerable amount of commiseration for the ratepayers of the city of Dublin. I believe they are heavily taxed, and that they do not get the worth of their money; but if they are badly used it is their own fault. If they were to organise a corporation which would be worthy of the name, and instead of wrangling among themselves, and turning the council chamber into a debating club for discussing sensational political questions, would consider the interests of those whom they represented, we should have the city of Dublin in a different state from what it now is. It has been authoritatively stated that it is the dirtiest city in Europe, and, from a considerable acquaintance with Europe, I think I may confirm the statement."

Often has the *Builder* said in substance what Lord Talbot de Malahide has at last openly given expression to.

Nearly five years ago the city engineer brought up a report on the question of erecting proper abattoirs in the city for the slaughtering of cattle. He stigmatised the then existing slaughter-houses as the most filthy that could be imagined. They are the same still, and are situated in over-crowded neighbourhoods. The corporation have almost rested on their oars since 1867 in the matter of abattoirs. They are now about affording a licence to a butcher for the maintenance of one in Marlborough-place, a most crowded neighbourhood; and though it is protested against by some of their own members, and by some of the merchants and gentry, they are determined to have their own way. It is within the province of the Lord Lieutenant to interfere when any of the Sanitary Acts are infringed by the neglect of the corporation, or when it refuses to carry their provisions properly out.

The corporation are about appointing their present borough engineer in future as consulting engineer, and supplying his place by an assistant engineer. They allege that the time of the former will altogether be absorbed in future for *several* years with the work of the main drainage. What is the use of putting the city of Dublin to the expense of a main drainage, by intercepting sewers, if the sewage is to be cast into the Bay, after intercepting it in the first instance from passing into the river.

The Limmer and the Val de Travers Asphalte Companies are pushing hard for precedence in laying their pavement in Dublin. The corporation are not disposed to indulge in the luxury of the Cheapside material to any great extent, or of any other asphalte material, unless they can get the inhabitants of the streets desiring this new roadway to pay two-thirds of the first cost of laying.

Building operations are not at present very brisk in the city, but with the opening of the spring an increase of new works is anticipated, in addition to those already in hand or projected.

THE MOOR-STREET STATION, BOLTON.

SIR,—I recently saw an extract from your valuable paper in which it was stated the London & North-Western Railway Company were building a new station in Great Moor-street, Bolton, &c. I beg to say, as a person passing the ground in question, they *are doing* nothing of the sort; they only ought to be, and the reason why I think I can guess. They have begun the station (new), and have, after getting the street and all around into the most filthy and disgraceful state, suddenly stopped, owing, I suppose, to the amalgamation which they intend with the Lancashire and Yorkshire Railway Company; but I think they ought not, for some three or four months now, to leave the public in such a mess as they are doing, whether they can get their Act or not, and I for one should be glad if you would just give them a quiet little paragraph in your truly valuable paper to that effect. JOHN HOWARD,

A Shareholder in both Companies.

THE TEMPLE OF DIANA OF THE EPHESIANS.

THERE appears to be every probability, or to speak forth bluntly the truth that is within, there is no longer room for reasonable doubt that the site of the great temple of Diana of the Ephesians has at last been determined by the judicious perseverance of Mr. J. T. Wood; the production of unequivocal remains of the building, and associated, moreover, with inscriptions as decisive, settles many a controversy. It may naturally be expected to open many more,—some, perhaps, that the outside world need not care to take part in till they have run their course, been argued out on all sides, and the issues cleared upon which general opinion may at last be fairly appealed to to declare itself. Then they who did best service will have best claim to cordial recognition. But even now there is little risk in expressing an opinion that the precise site ought not to have remained quite so long the secret that it certainly was up to the time that it was studied by the architect now on the spot. It seems only too clear, indeed, for the self-complacency, not to say composure, of some of us that the enigma in the terms it was stated did really include its own solution, and that comparison and analysis of the notices of ancient geographers and antiquaries only required to be somewhat more sagaciously conducted for all to be agreed at what spot the spade might be put in with all but certain hope of success. Put in it has at last been, with success the more creditable that the explorer did not come right by mere process of exhaustion, leaving no other opportunity for error or opening for research, but in virtue of reading off for himself with better skill the meaning of conjoint topographical and literary evidence. A conviction that was held to justify was duly vindicated by the resolute removal of 18 ft. of solid earth; and then back again after buried centuries the long-hoped-for testimony of the lower frustum of a column in position was brought to view of men, and to the light of now photographic day. Beyond the veracious and verifying photograph few details have at present reached this country, but the difficult excavation proceeds; in the meantime, it may not be without interest to pass in review the notices that have come down to us respecting the architecture of the temple of the great goddess Diana,—Artemis of the Ephesians: the pains will not be thrown away even should excavation when it has done its best be rewarded with better success than, all difficulties considered, can be hoped for by the most sanguine. The precedent of the Mausoleum instructs us how vexatiously fortune will sometimes give much, indeed, to well-directed endeavours, and yet keep back the one or two evidential relics that would settle the last difficulty, and how ruins of the original monument may owe as much illustration to literary fragments as they confer. Let us weigh then the literary evidence that we have independently, and so be prepared to appreciate at once the full significance of whatever is brought up from below the ground; no doubt it would be agreeable to find that we are still in time to vindicate criticism from the opprobrium of only discovering after the monument is produced that it had been in possession of some main conclusions all along had it only had the dexterity to educe them. It is likely we may have to be satisfied with much less than this; with evolving, for instance, a distinct inconsistency between the several notices, and thus between the plans of restoration that are severally compatible with the conflicting authorities; with gaining a firm conviction of no more than the probabilities from general consideration of the seat of error,—of the possibilities of errors on all sides,—of the vitiation by inaccuracy of every notice more or less; and so we may find ourselves left at last fain to work out a result avowedly conjectural as based upon one most isolated averment of an ancient writer, of whom it is only conjectured at last, not proved, that he knew anything about the matter, or that his words—if he had knowledge—have come down to us accurately.

And, then, it is quite possible that the restoration which evinces itself in the course of such an inquiry as beyond comparison the most probable by the evidence, may, after all, be proved wrong by the result of excavation. The highest probability remains still but a probability, and does not amount to warranty of absolute truth,—let this be ever a check to the positiveness of speculation,—but, still, much is done if the matter of highest probability can be established legitimately by the evidence. A true conclusion from false premises,—a correct restoration that is inconsistent with the grounds assigned for it,—we may value as Socrates avowed he valued the guidance of the man who only thought he knew the way to Larissa, though he did, ignorance notwithstanding, happen to take the right road and get there.

One other motive for this review of the evidence may be mentioned: although the result may only be a hypothesis, a hypothesis,—the best to be had,—is always of use to an explorer,—and this exploration, if supported as it should be, will not be brought to an end in a day;—it, at least, suggests what questions may be most reasonably put first,—gives a reason for striking in one direction in preference to any one of a multitude of others that are open: it is scaffolding that is not the less useful because constantly changed and altered and very unlike indeed to the structure to which it gives up its place at last. Neglecting, then, the notices that bear exclusively on the position of the temple,—a matter settled,—let us gather up the scattered hints as to construction, dimensions, and style,—and, as very materially affecting style, the date of the temple.

The temple that we are concerned about was in process of completion when Alexander passed into Asia, B.C. 334, in succession to one that had been set on fire on the very night of his birth, B.C. 356. He offered, we are told, but in vain, to defray all past expenses, and undertake all that were to ensue, on condition of being allowed to inscribe it as his dedication. This coveted honour was conceded for the Temple of Athene at Priene; and the stone that bears what is almost equivalent to the autograph of the great Macedonian is now to be seen in the British Museum, presented by the Society of Dilettanti, among other produce of their recent excavations. Strabo states that the temple of his day was an improved reconstruction,—was, in fact, this same reconstruction of that burnt by Herostratus. He adds, what is most important, that, besides private contributions, including personal ornaments of the women, some funds were realised by sale of the former columns, as proved by decrees, that, perhaps, may still reappear among inscriptions from the ruins. The conflagration of St. Paul's without the walls, in our own time, well illustrates what mischief fire might work on such a structure. It therefore appears that the improvement intimated

extended to the entire order; and we may safely assume the order of the temple that existed long after the time of St. Paul to be a work of the same fine character and in the same general taste as the contemporary Ionic structures, the temple at Priene and the Mausoleum at Halicarnassus; and any scheme of restoration must be subject to certain control in unison with this fact, and may hope for furtherance from its due consideration.

Strabo distinguishes three forms of the temple; the original of which he names Chersiphron as the architect; the enlargement of this by an architect unnamed by him; the reconstruction after ruin or damage by the incendiarism of Herostratus, and with enhanced beauty by an architect whom he reports hesitatingly as the Cheirocrates (qy., read Deinocrates), who laid out Alexandria.

From the hesitation with which he speaks as to the latest architect, we must not count too strongly on his knowledge who was the first; otherwise, when accuracy is in question, he is not an author to be lightly set aside out of regard for Pliny, who implies (xxxvi. 14) that it was Chersiphron who was the architect of the last reconstruction.

But Pliny is supported here by Vitruvius, who speaks of the existing Ephesian temple as commenced by Chersiphron of Gnossus and his son Metagenes, and only completed by a Demetrius and Pæonius of Ephesus. It is thus clear that we must correct Pliny's text in another place (vii. 37), and read Chersiphron of Gnossus, instead of Ctesiphon, to whom he ascribes the "admirable fabric of Ephesian Diana." The limiting date of this school of architects is further approved by the notice of Vitruvius that the same Pæonius, in conjunction with a Daphnis of Miletus, built—so far as it was ever built—the temple of Apollo at Miletus, a rival in magnitude to the Ephesian. The Gnossians, father and son, left a treatise on the symmetries of their Ephesian design. There is deeper significance than can be dilated on here in the observation that Greece at this date could be under obligations for artistic help to Crete,—to Gnossus, home of, at least, semi-mystical Dædalus and his artist clan—of Dædalus, architect, even according to Homer, of the broad dancing-place of Ariadne. The literary works have perished; the architectural illustrations to a certain extent remain, and may yet give us back whatever was of chief importance in the written text.

Pliny states that the temple—which evidently to him is one and the same through all its transformations—was in course of building for 220 years, which, reckoned back, carry us from the date of Alexander's visit, and its final embellishments, to the time of Crœsus, king of Lydia, and a distinctly marked epoch in its history, inasmuch as we learn from Herodotus that he contributed some columns. When Herodotus wrote, the Heræum of Samos was the largest Greek temple that he knew (ii. 60), although he pairs with it the temple as then existing at Ephesus (ii. 148) as a marvel of magnitude; the enlargement, that gave unquestioned supremacy to the Ephesian, was, therefore, later than his time. The only hint that I know for dating this extension more exactly, and not too much to be relied on, is, that it may have taken place after that conflagration of the temple that occurred as late as some sixty years before Alexander,—in the same year as the death of Socrates (B.C. 399).—(Euseb. Pamph. Chron. Cam., i. 134.)

Whatever temples may have preceded that which Herodotus knew, there cannot be a doubt that his occupied the site—and the site newly cleared — of the structure that we are interested in.

The vast Heræum of Samos known to Herodotus must be carried up to the time of Samian prosperity and power (530—580 B.C.), the age of Polycrates and Crœsus. He gives the architect's name, Rhœcus; he was also a distinguished sculptor. Diogenes Laertius states that Theodorus, son of Rhœcus, supplied the counsel to lay the foundations of the Ephesian temple on charcoal, as suited to resist the moisture of the ground. Theodorus, according to Vitruvius (Præf. vii.), left a work upon the proportions of the Heræum, which was in the Doric style; and it seems most probable that the Ephesian temple at which he assisted was in the same,—that the columns therefore that Crœsus contributed and that were sold at the rebuilding were Doric columns. There seems to be no reason for disallowing a prose treatise at this date, and resorting to some supposed second Theodorus.

The date assigned corresponds with Livy's notice, which is, at least, evidence as to his belief, that about A.U.C. 157 (=B.C. 557) there was a temple of Ephesus built by contributions of the various states of Asia, and forming a centre of concord and alliance. Contributions of this nature—it may be said in passing,—the dedication of columns by the King of Lydia,—the custom for Asiarchs to be selected for honour on account of wealth, and to contribute—to have to contribute—liberally to public funds,—these may be the matters of fact represented, and no more by Pliny's strange notice that the 127 columns of the temple were presented by as many kings.

Pliny also has a notice of the expedients employed in providing a foundation for the enormous structure in a soft and marshy situation. The situation, he says, was deliberately chosen as a security against shocks of earthquakes and openings of the earth; otherwise, it may easily have been that the sanctity of a precinct of the goddess, who ever affected freely-watered groves and meadows (see E. Falkener, "Ephesus," p. 199), may have left the engineers no choice. The account given by Herodotus of the great works of engineering at Samos,—tunnelling through a mountain and vast mole of the harbour,—explains the resort to Samos for advice in a difficulty even greater than Stephenson had to cope with at Chat Moss. "To preclude sliding and instability," says the naturalist, "they laid down first a bed of (beaten or) trodden charcoal, and upon it fleeces of wool." It seems just possible that this notice may cover an original fact of the use of charred piles; otherwise the fleeces of wool might have been laid down to more manifest purpose at first.

Of what solidity was the preparation made for the superincumbent weight we have a notice in the fragment that alone remains of the description of this wonder of the world by Philo ("De Sept. Orb. Mir."). "When the soil had been dug out to a great depth, and an immense excavation effected, the architect laid the foundations with stone from the quarries above; so that in these subterranean works he exhausted the quarries of entire mountains. The ground being thus rendered firm by a solid foundation, and strengthened to support, like an Atlas, the superincumbent building, he commenced the work by forming a basement of ten steps." Any exaggeration there may be in these expressions we shall find to have been invited when,—the basement thus prepared,—we proceed to the verified dimensions of the superstructure.

The dimensions of the entire temple (*universo templo*) are given by Pliny as 220 ft. by 425 ft. These measurements of front and flank present themselves, in the first instance, as probably those of the top step or stylobate, which in itself is the most natural and seems to have been the most usual standard of relative magnitude; but they may be those of the lowest step, which there was a motive for quoting in preference, in order to give the wonder of the world the advantage of the highest numbers obtainable, and the comprehensive phrase of Pliny would be justified by this interpretation. We have therefore to work out the consequences of each assumption in turn in connexion with whatever other information we possess that affects the question. There the numbers stand, and we must take them as authentic to begin with; it will be time enough when we find that the plan and proportions of the temple are not to be consistently brought out by them,—to consider which dimension is most likely to be erroneous on general grounds,—and what modification will bring out the most plausible result either as requiring least change or from satisfactoriness in itself, considerable change notwithstanding. We may, however, be more fortunate than to be driven to such straits. The further notices to be had regard to are these:—Pliny (xxxvi. 14) states that the height of the columns was 60 ft. and the weight of the epistylia,—the architrave stones,—enormous; the number of columns he gives as 127, "made by as many kings," of which thirty-six were *cælatæ* (sculptured in relief); one by Scopas. Pausanias confirms the extravagant magnitude of the temple, which, he says, surpasses in this respect all other constructions of mankind (iv. 31, 8. Cf. vii. 5). I must be driven to sore straits indeed before I can consent so to read Pliny's Latin as to gain a reduction of the columns to 100 with Fergusson or to 120 with Falkener by a supposititious comma before *viginti* or before *septem*.

Vitruvius states that the temple was of the Ionic order, and octastyle and dipteral on either front, and having double rows of columns on the flanks. Philo, *de Septem. Orb. Mirac.*, states, as we have seen, that the temple was raised upon a basement of ten steps; but there is a possibility,—not, I think, a probability,—that he refers to a detail of an earlier temple that may have been changed in course of enlargement and restorations. It is possible also,—again, I think, not probable,—that the ten steps are to be reckoned exclusively of the top step or proper stylobate.

The full breadth of front of an octastyle temple is made up of seven columniations, plus the distance from centre of angle column to margin of steps, and the breadth of the steps of either end; understanding by the term columniation an extent from centre to centre of adjacent columns. Fergusson allows 11 ft. for the sum of the two half bases and margin, and 30 ft. for the spread of ten steps, 15 ft. on either side, which is a liberal allowance at least, as there may probably have been only nine treads to be accounted for, in consequence of the stylobate reckoning as a step. This leaves 179 ft. divisible by 7 ft., and brings out 25 ft. 7 in. for the columniations. It is by an oversight that he notes this interval relatively to his estimate of diameter of the column, as corresponding to the eustyle spacing, which prescribes an intercolumn, not of $3\frac{1}{2}$ but only of $3\frac{1}{4}$ diameters.

What is of more importance is, that we cannot possibly admit such an extravagant scantling for intervals by the score, as $25\frac{1}{2}$ ft. With every consideration for the value to be assigned to consenting ancient testimony as to the magnitude of the structure, especially to the explicit account of Pliny, as to the difficulty of setting the enormous architrave stones upon the columns, we must demur positively to such dimensions in such multitudes. The architrave stones of the Parthenon are but 14 ft.; the single ditriglyphal span of the Propylæa, 18 ft.; that of the colossal temple at Miletus, $17\frac{1}{2}$ ft. This temple, unlike the Ephesian, was never finished, but from its scale may well have been designed to be a rival; its proportions deserve more consideration here, not only because there is a notice that one of its architects, Pæonius, had been concerned in building or restoring the Ephesian temple, but from the height of its columns, as measured, being 63 ft., to compare with the 60 ft. of Pliny. The columniation of the Temple of Jupiter Olympius, of Athens, is 18·176 (the columns, 55·225). Only the angle architrave stone, which is exceptional, as entirely covering one capital, is 21·68 (3·438 by 4·1); it is the largest now found in construction at Athens, and weighs about 23 tons (Penrose). Only four such would be required for the structure. It is manifest, therefore, that we must give up a scheme of restoration that would apply the undiminished 220 ft. of Pliny's full breadth to the upper step of an octastyle front.

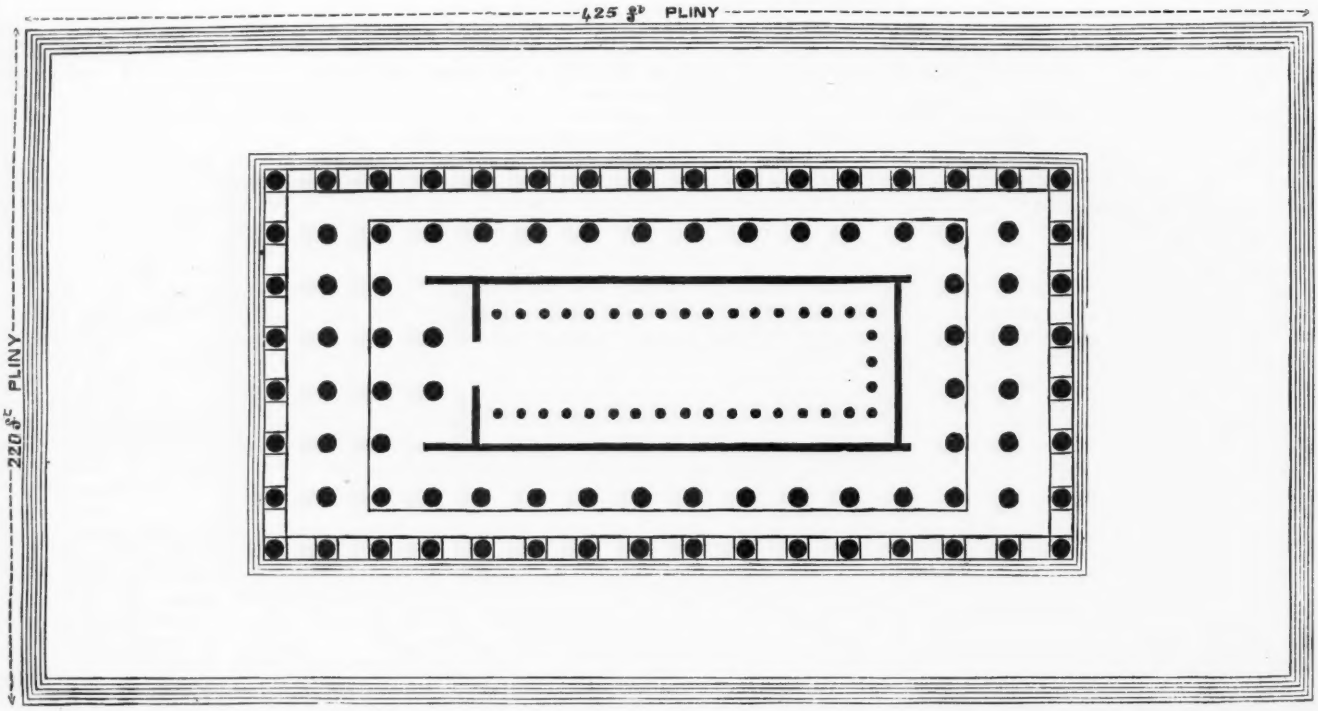
Edward Falkener, in his elegant and comprehensive volume on Ephesus, has taken the alternative of interpreting the Vitruvian passage, with a rather rash variation, and worked out a decastyle plan with surprising ingenuity and plausibility also; but here again the fatal difficulty is overlooked and passed over of assuming such a span for the architrave stone as 23·63 ft. It can scarcely be admitted that we have a legitimate option to exceed the spacing of the cited examples at Miletus or Athens; even if we strain probabilities so far as to adopt 19 ft., and allow 9 ft. for plinth and margins, we have still 20 ft. on either side, divisible among ten or more, probably only nine treads ($19 \times 9 + 9 = 180 + 40 = 220$ ft.).

No doubt when we renounce the reference of the given dimensions of plan to the stylobate immediately and accurately, we are by no means bound to assume that they were taken upon lines of equal projection beyond it on front and flank. The steps may easily have had a further extension in one direction than the other; there is a precedent in the Ionic portfolios of the Society of Dilettanti. The ascent of as many as ten steps may, indeed, possibly,—in my own opinion probably in the highest degree,—have been interrupted by some wider step or platform. Such a probability at once affords a means of extrication from difficulties of extravagant spacing to advocates of either arrangement; but we are bound by the record to give the benefit of relief to the octastyle arrangement in the first instance before entertaining the decastyle that is in the position of an uncertificated pretender.*

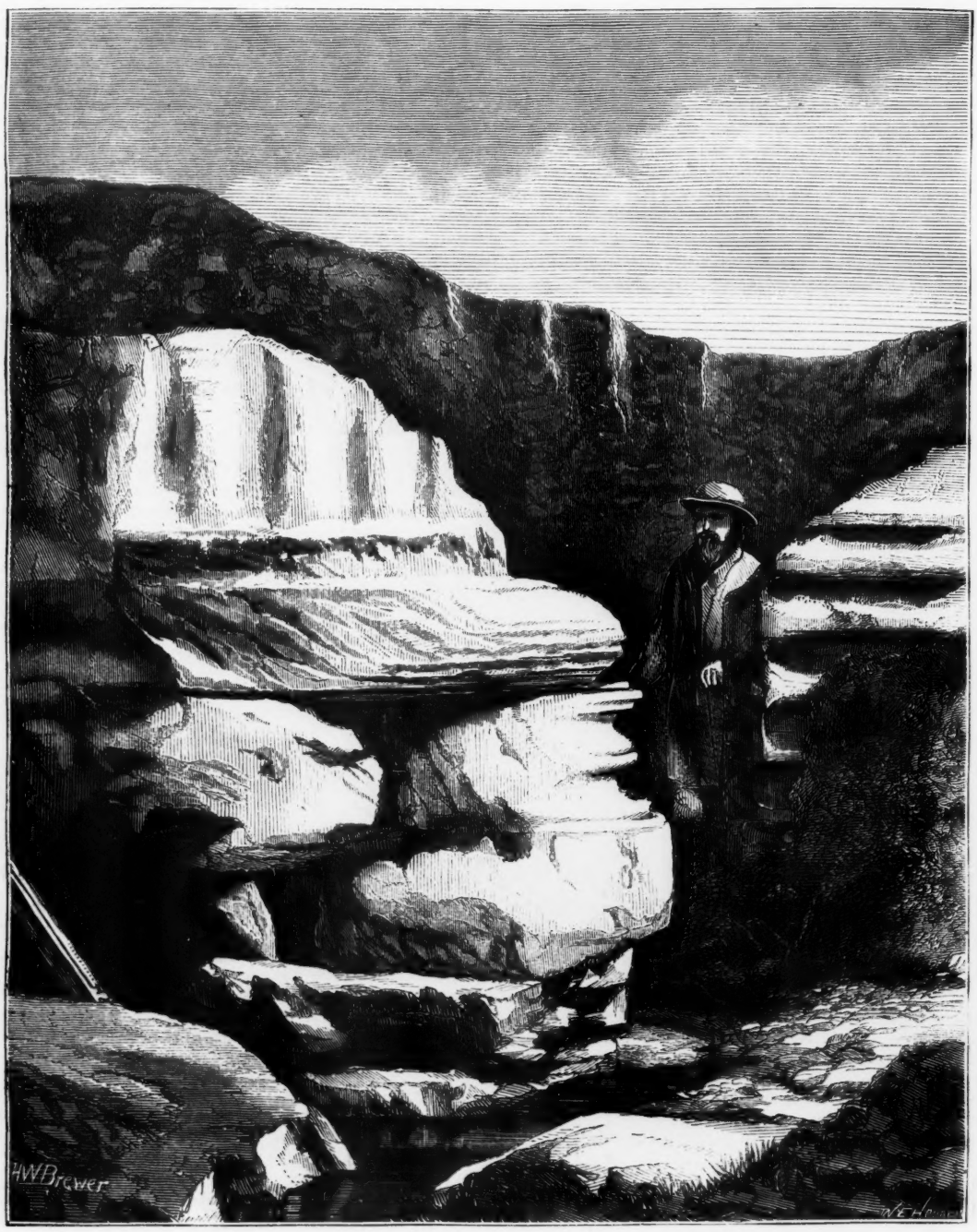
W. Watkiss Lloyd.

* To be continued.

THE TEMPLE OF DIANA, EPHESUS.



Sketch Plan.



Remains of Column, 6 ft. 1 in. diameter, discovered by Mr. J. T. Wood, 1871.

THE CHAPTER-HOUSE OF WESTMINSTER.——*As Restored by Mr. G. G. Scott, R.A., Architect.*

[See p. 98, *ante*.

MR. STREET AND THE NEW LAW COURTS.

SIR,—Mr. Street's recent pamphlet is neither so accurate nor so complete as it ought to be. Smarting under Mr. Fergusson's caustic account of his appointment, he seeks consolation in an endeavour to damage Mr. Barry; and as he could get no help in this attempt from any one of the facts of the case from the beginning to the end, if fairly stated, he——well, he does what no one ought to do, least of all one who assumes so lofty a tone of rebuke when dealing with his critics. It appears that the report of the sub-committee of lawyers upon the competing plans happened to be less favourable to Mr. Barry than to other competitors, but it also appears, though Mr. Street does not tell us so, that the Judges of Designs for whose use the report in question was made, did not indorse the view of the committee, but, on the contrary, gave Mr. Barry's plan the first place. Fairly stated, therefore, the fact of this committee's disapproval could afford Mr. Street no help in his attack on Mr. Barry. He consequently proceeds to manipulate the matter, and produces the astounding statement that the inquiry conducted by this committee was "the most important of all, as the final plan had to be founded on this very report to the exclusion of all others." "With sorrow for the writer," I have simply to say that this is not true. If it were true, surely the competitors would have been made aware of it. They would have been told that everything depended upon their satisfying this committee; but I doubt if the competitors knew until after the designs were sent in that any such inquiry was to be made. I believe that the first hint they had of the existence of the committee was in your pages, where a correspondent called attention to certain curious proceedings of the said committee, wherein an entirely new set of tests was proposed to be applied to the competing plans. It is well known that the committee did apply their new tests, and having first of all, and after seeing the designs, resolved definitely on certain all-important questions which had been left open in the instructions to the competitors, they proceeded to award the first place to the only plan which completely met these all-important questions—Mr. Waterhouse's. I am not in the least concerned to dispute the wisdom of their award. I simply state the fact as to the result of their inquiry. But, as already remarked, it was quite a subordinate inquiry after all. Their report, in company with others, was submitted to the judges of designs, who, whatever they did, certainly did not endorse the opinion of the lawyers. What, then, becomes of Mr. Street's statement? Moreover, if that statement were true, it would imply that the authorities had arrived at a foregone conclusion to accept no decision from the judges of designs which did not coincide with the opinion of this committee; and it may be that this is so. Certainly the final result is that the lawyers have to a great extent gained the day. They have got the plan, if not the man, they approved; though reading Mr. Street's pamphlet, one is left to suppose they have got both. Indeed, I think we have a right to complain of the disingenuousness of all Mr. Street's remarks about the plans. He quotes the clauses of the instructions to the competitors, which point out the paramount importance of arrangement and convenience of plan, and then so introduces his present plans, and the hearty approval given to them by the late lamented Mr. E. W. Field, as to create the impression that his plan has gained him his appointment. One is compelled to view the matter in this light because he is replying to Mr. Fergusson, who says he was appointed because his plan was "the worst." Now, every one knows that Mr. Street's plan was nowhere in the competition, and that his present plan is Mr. Waterhouse's. I have no doubt that this latter fact is the key to the hearty approval by the late Mr. Field, of which Mr. Street tells us. Why will he not make his statements complete?

I will say nothing on the question of style; but I will say this. Let not Mr. Fergusson nor any enemy of "higgledy-piggledy" lose heart. Mr. Street is, to compare small men with great, somewhat like Mr. Gladstone in one respect,—he shows a great facility for being converted. Some people do not think so. I do; and, as the Attorney-General says, "I will tell you why." When the decision of the judges of designs was impugned by the unsuccessful competitors or some of them, Mr. Street was quite clear that the decision was good, and that it would be rank dishonesty to upset it. When he was appointed sole architect, he did not think it rank dishonesty to accept and leave Mr. Barry out in the cold. *Voilà* conversion No. 1. When appointed, he threw over his own competing plan, and appropriated Mr. Waterhouse's,—conversion No. 2. Then came the famous battle of the sites, when he began by advocating Carey-street; but when Mr. Lowe, the purse-bearer, took the field at the head of the enemy, Mr. Street showed his gratitude to his friends the lawyers, who like his plans so much, by deserting them bag and baggage, and going over to the Embankment,—conversion No. 3. The lawyers gained the day, and the purse-bearer, vanquished, had to return to Carey-street, with the recalcitrant Mr. Street in his train. As that, however, may have been an unwilling journey on Mr. Street's part, we will not count it as conversion No. 4.

The conclusion I draw from this little truthful history is of a nature which ought to be consolatory to Mr. Fergusson. To get a satisfactory building for the Law Courts it may not be necessary to change the architect, but only to change his views, and the purse-bearer will do that for us in a trice. Report says that he is not at all unlikely to give us a proof of his power.

PLAIN-SPEAKING.

ASPHALTE AND ITS PROGRESS.

A CORRESPONDENT acquainted with this subject writes as follows:—

Mineral-rock asphalte was first introduced in England about thirty years ago; and from that time until lately materials were imported, and works executed, to any large extent, by the Pyremont Seyssel Company, and by Messrs. Armani & Co., only. The merit of this impervious and plastic material was comparatively little known and appreciated by architects and contractors, though as well adapted for flooring, flats, roofs, stables, granaries, warehouses, &c., for the prevention of dampness and vermin. The advisability of using asphalte, mineral or factices, for roadways, with the great traffic of London, is a question still to be decided, and only time and trial of the various sorts will resolve the question.

The asphalte of Val de Travers, for roadways, as in the Poultry, Cheapside, and Holborn, in its natural state, warmed, spread, and compressed, was first introduced in England in 1853; and the list of prices at that time shows for 1½ in. thick, only 1s. 5d. per foot super., or 12s. 9d. per yard. The City paid 18s., and afterwards 16s. per square yard, for the Poultry, &c. The experiments and samples made in that year left doubts as to its efficiency in all respects.

The asphalte powder of the Val de Travers Mine, being rich in bitumen, is well suited for roadways made with it; but it still remains to be seen how it can be well applied and utilised, in its warm and compressed state, so as to obtain a uniform, levelled surface. Wear and tear are also a difficulty. The specimen in Holborn was laid down at 2½ in. thickness; and now we have remarked on pieces taken up for repairs that it is reduced to nearly 1 in., by the continual heavy pressure.

Reserving for the future opinion as to what has yet been done, we feel strongly the sanitary and economical advantages of smooth and impermeable street surfaces.

The old firm of Armani & Stodart, having transferred their business to the General Asphalte Company, Limited, and that company having entered into large contracts with the London Tramway Company, for asphalte paving of roads, have nearly finished five miles in Camberwell and Peckham parishes. Over 6 in. of strong concrete, they spread some fine broken granite, and fill and mix it up with asphalte, which they call "McAdam Asphalte," and on the top they lay a coat, 1 in. thick, of Seyssel asphalte, from the mines of Garde Bois, Lovagny, and other natural mineral asphaltes, mixed with mineral tar. They employ a new machine, drawn by a horse, which they call "Locomobiles," which brings the materials hot and ready to the works, and thus prevents the smoke and smell nuisance.

However the question of using asphalte for roadways may be decided, we are convinced that good, natural, mineral asphalte may be properly and efficiently used for *footways*, and the attention of parish authorities may very properly be called to the subject.

Very few specimens, until now, were laid down for footpaths, but the General Asphalte Company having obtained permission of the Board of Works to lay down their asphaltes on the footpaths on the south side of the Victoria Embankment, leading to Blackfriars Bridge, we shall have opportunity for judging.

We shall not enter on the merits of the various quarries of asphalte, but in all continental Europe there are not less than fifty-two mines or quarries, with more or less rock stone, mixed with bitumen, varying from 3 to 12 per cent. These quarries are situated—fourteen in France and Savoy, four in Switzerland, eleven in Prussia, Hamburg, Alsace, and Loraine; eight in Austria, with Hungary and Dalmatia; nine in the kingdom of Italy, three in Spain, one in Portugal, two in the empire of Russia and Poland, and some are placed at too great a distance to be conveniently worked and imported. There are already formed twenty-four companies, limited, with capitals amounting to the large sum of 3,570,000*l.* sterling, but as yet only three or four of those companies have commenced operations.

COMBUSTIBLE BUILDINGS IN THE CITY.

SIR,—Can you give me and the public at large any information as to what the powers are that enable the City folks to permit wooden and inflammable structures to be put up close to the highway, while in the rest of the metropolis no one is allowed to erect a wooden outbuilding, even at the bottom of his own back-garden? Some time ago a large wooden and canvas structure was put up at the corner of Ludgate-hill and Bridge-street, Blackfriars, and now another wooden shop for the sale of tea sports its ugliness to thousands on their way to and from the railway-station, close by the last-named. Perhaps it is intended to fill up the plot of ground with a row of these unsightly and dangerous booths, close to the footway, and only waiting to receive a spark from one of the engines continually passing just over them to convert the lot into a glorious blaze of triumph. With your aid probably such a calamity may be prevented. Who is responsible for these irregularities?

Y.

ALL SAINTS' CHURCH, MAIDSTONE: MEDDLING.

SIR,—An offer has been lately made and accepted to supply stained glass to the east window of this church. The window is large, and the offer liberal. But the donor, or his professional adviser, or glass-painter, is not content with supplying glass: he proposes to demolish the present window, and rebuild it, or build another with similar tracery, 5 ft. higher.

In the history of the church, by Mr. Whichcord, that architect observes,—"Perhaps few single buildings possess more completeness and uniformity than this church: one general idea is prevalent throughout, with a correspondence of parts, proportions, and details very uncommon in Middle-Age structures."

Now, the person who has the present job in hand seems to be of opinion that he knows better than the architect of All Saints', Maidstone, and that the completeness, uniformity, and general congruity of the building are not to be considered in comparison with the improvement his patch will make.

The present east window is in excellent preservation, and therefore presents no excuse for destruction on that account.

Surely such a tampering with an old church is a pitiful vanity, a wanton barbarism, and an impertinence to architecture.

A. LEHASE.

THE SEWAGE QUESTION.

A REPRINT has appeared of the "Report of the Committee on the Treatment and Utilisation of Sewage re-appointed at Liverpool, 1870" (Taylor & Francis, Printers, Red Lion-court, Fleet-street), read at the meeting last year of the British Association in Edinburgh. It contains an account of several of the chief sewage experiments, such as those at Breton's Farm, near Romford; of Beddington Farm, Croydon; Norwood Farm; the Sewage Farm at Tunbridge Wells; the Redhill and Reigate Sewage Farm, &c.; also of the Dry Earth System, and its impracticability for cities and towns. It also gives an account of how the wind was taken out of the sails of the sensational Dr. Cobbold, who horri-

fied the public with his parasites in oxen fed on sewage farm produce. The Liverpool Committee took this bull by the horns, presenting the doctor with an ox for slaughter and examination after being fed for twenty-two months on the Breton Farm produce. This examination was made with the aid of Professors Marshall and Corfield, and in the presence of several members of the committee (which includes Professor Ansted, F.R.S., Mr. Bailey Denton, Dr. Odling, Sir John Lubbock, F.R.S., and other scientific men). Dr. Cobbold had to confess "the perfect freedom of that animal from parasites of any kind." In his explanations he says, "The sewage had a strong smell of beer, suggesting the presence of sufficient alcohol to destroy the vitality of all ordinary parasitic germs." We should think this must have excited some sensation amongst the distillers.

INDIVIDUAL PROVIDENCE FOR OLD AGE AS A NATIONAL QUESTION.

A PAPER on this subject was read at the Society of Arts on the 31st ult. by Mr. George C. T. Bartley. The Earl of Derby was in the chair.

Mr. Bartley drew attention to the means which now are in active operation, and are understood more or less by the industrial classes, for encouraging habits of providence, and how they are made use of; showed how they fail to provide for old age; pointed out the means which do exist for enabling a man to put by, in small weekly sums, for old age; and treated of the means which it seemed to him should be taken to encourage providence for old age, and to make known among all classes the facilities which exist for this purpose.

He suggested the formation of an association whose work should be to promulgate information as to the best means by which the wage-classes, domestic servants, &c., can put by weekly sums to provide for old age; to make known more generally the advantages offered by the Post-office by purchasing deferred annuities and life assurances by weekly and other payments; to facilitate the means of collecting such small weekly sums by inducing manufacturers and employers of labour to open, on their premises, offices for the receipt of such sums as arranged for by the Post-office; and generally to endeavour to create habits of providing against old age and possible premature death among those earning small wages. It should not, said Mr. Bentley, give relief in any form, or be in any way of an eleemosynary character, but should merely make known among all, by means of lectures, addresses, personal intercourse, and other means, in all parts of the kingdom, the facilities which exist for enabling a man to provide for himself in proportion to his earnings, in the best manner, as in allowing a regular weekly deduction from the wages, and at the smallest possible sacrifice compatible with sound commercial security, such as in the Government Post-office deferred annuities, &c. The society, he added, should also endeavour to effect alterations or extensions in the Government systems at present in existence, if this should be required, and to frame others if experience from time to time proves them to be necessary. In conclusion, said the speaker, I assert that a far nobler field for charity than almsgiving is the prevention of distress, which can be best done by inducing and stimulating every one, as far as in him lies, to provide for himself and for those of his own household.

The paper was followed by a discussion, in which Lord Derby took part.

PROPERTY IN LONDON.

IN the case "Gladstone *v.* The Duke of Newcastle" (Rolls Chambers), which was a proceeding by Mr. Gladstone and Lord de Tabley, as trustees of the late Duke of Newcastle, in respect to the mansion in Carlton House-terrace, in which the present duke had resided, an application was made on the part of the plaintiffs that a second valuation of the mansion should be obtained.

The solicitor for the plaintiffs said the valuation was 50,000*l.*, which was considered very much under its actual value. The interior of the house was very costly, and another valuer would give an estimate for a fee of 20 guineas.

The Chief Clerk (Mr. Hawkins) asked the rental of the house.

The solicitor said between 2,000*l.* and 3,000*l.* a year.

The Chief Clerk said it could have been ascertained, as an assessment must have been made.

The solicitor on the other side made no objection, as the fee for a fresh valuation would only be 20 guineas.

The Chief Clerk made the order, and, in answer to a question, could not learn whether the house was to be sold by auction or contract.

Order accordingly.

A DEPUTATION OF CIVIL ENGINEERS.

ON the 30th ult., his Imperial Majesty the Emperor of Brazil received, in Paris, a deputation from the Institution of Civil Engineers, to present to his Majesty the diploma as an honorary member of the society, and to receive his signature in the register of members. The deputation, which was composed of Mr. Gregory, past-president; Mr. Hemans, vice-president; Messrs. Brunlees and Woods, members of council; Mr. Henry Vignoles, representing his father, Mr. C. Vignoles, past-president; and Mr. Charles Manby, honorary secretary,—was graciously received by his Majesty, who, in a few well-chosen sentences, expressed the pleasure he had felt at joining a society in whose labours he fully sympathised, and always had taken so much interest. A considerable number of persons were present.

NEW TRADE SOCIETIES' HALL AND CLUB ROOMS AT CHELSEA.

THERE are at present in Chelsea and the neighbourhood upwards of seventy friendly societies, and a building is about to be erected in Chelsea specially for their use, which is to combine all the features of a public hall with those of a club and reading-rooms. The estimated cost of the building is 5,000*l.*, which are being raised in shares of 1*l.* each, amongst the members of the various societies, the amount being payable by monthly instalments of 1s. each, and already the greater portion of the shares have been taken, and a considerable part of the required capital raised. The undertaking is of a somewhat novel character, and when built, the hall will be the first of its kind in the metropolis erected on this plan of co-operation. We understand that a site has been obtained in the neighbourhood of King's-road, Chelsea, in the direction of Kensington, and that the erection of the building will shortly be commenced. In the meantime, temporary premises have been secured for the purposes of the club.

VAGARIES OF COMPETITION COMMITTEES.

SIR,—I can furnish you with another instance of what may be mildly termed the "vagaries of committees," but somewhat more eccentric than the Worcester case. The directors of the Leeds Exchange Company invited six architects, myself among the number, to furnish designs for their proposed building. The time was limited, and I applied for one day's extension of time, to enable me to finish the perspectives. I applied in vain, but one competitor, not having sent in perspectives, was allowed to prepare and send in *two*, some weeks after the competition was closed to the other architects.

The directors selected the design thus supplemented, placing my own second, and that of another Leeds architect third.

GEORGE CORSON.

RESPONSIBILITIES OF ARCHITECTS AND BUILDERS.

WARDLE *v.* THE REV. JOHN BETHUNE.

THIS case (before the Judicial Committee of the Privy Council) has been decided. There had been litigation between the parties for more than ten years, and the present case was an appeal from the Court of Queen's Bench, Lower Canada. The appellant had built the cathedral church at Montreal, which had been destroyed by fire, and sued the respondent, the rector, for an alleged balance of 5,000*l.* The answer was that the tower had sunk, and the liability was denied. There had been three appeals in the matter besides the present one.

Mr. Horace Lloyd, Q.C., and Mr. Morgan Howard were for the appellant; Sir Roundell Palmer, Q.C., and Mr. Bompas for the respondent.

Sir Joseph Napier read a long judgment, in which he reviewed the litigation and the law applicable to the case. Their lordships held that the architect and builder were to be considered as one, and bound to provide for the stability of the building. Their lordships would recommend to her Majesty that the appeal be dismissed with costs.

This seems a very important case, though there may be special conditions of contract that will prevent it leading in other instances. The dispute now pending with respect to the Covered Market at Preston seems to have features in common with the above case. Part of the market fell, and the builder denies the responsibility, claiming that he constructed the market in accordance with the architect's design, and that the design was faulty.

THE IMPROVED INDUSTRIAL DWELLINGS COMPANY, LIMITED.

THE report and statement of accounts to be presented at the seventeenth half-yearly meeting of shareholders of Sir Sydney H. Waterlow's Company to be held at the Mansion House, London, on the 10th instant, has been published. According to this report, the dwellings at Bethnal-green have been completed, and handed over by the builders; and about 160 are now occupied. The buildings in George-street, Grosvenor-square, will be opened in the course of two or three weeks. The directors hope that those in Compton-street will be opened shortly after, and that the others in King-street and Crab-tree-row will be partly occupied by Midsummer. The great demand for improved dwellings in the neighbourhood of Oxford-street has been shown in the case of the George-street buildings, there being already upwards of 180 applications for the thirty-eight dwellings. The directors hope soon to obtain additional sites near this locality, and have opened negotiations for that purpose. The directors have obtained from the Marquis of Westminster the lease of an additional site in Ebury-square, Pimlico, and sixty-four dwellings are now in course of erection there.

The report contains a table showing the progress of the Company since its formation in the year 1863. From this table we extract the following particulars:—

At 31st December.	No. of Dwellings erected and occupied.	No. in course of erection.	Total.	Expenditure exclusive of Cost of Land at Bethnal-green.	Surplus Profit after payment of Dividend of 5 per cent.
				£	£ s. d.
1864	...	208	208	14,078	...
1868	564	190	754	84,632	497 15 10
1871	1,001	262	1,263	170,025	1,598 12 1

The directors say that they "venture to think that this statement is highly gratifying, as evincing the appreciation in which the efforts of the Company are held by the working classes; while the fact of the Company having from the commencement paid a dividend of 5 per cent., and carried forward considerable balances, is a strong proof that, while the tenants continue to pay the commercial value of their occupations, their independence is in no way interfered with; and the care generally taken of the property by the tenants, is an evidence of their desire to aid in the extension of the work, from which they derive so many moral and physical advantages."

THE CHANNEL TUNNEL COMPANY.

SIR,—Allow me to offer some statements in reference to the article in the *Builder* of the 27th ult.

The projects of M. Thomé de Gamond referred to in the article, are "studies" in which he was engaged up to 1867, and, however generally valuable, have no direct relation to the proposals of the Channel Tunnel Company.

The present proposal does not embrace any openings or shafts other than those on the shores.

The engineers are Messrs. Hawkshaw, Brunlees, Thomé de Gamond, and Low, and their plans are approved by Messrs. Talabot and Michel Chevalier, and generally by a French Imperial Commission of Civil and Mining Engineers specially appointed to consider them.

The driftway is to be made in the *lower* chalk, not in the *upper* chalk, as stated in the article,—an essential difference.

The investigations of the engineers, extending over

lengthened period and including deep borings on each shore and obtaining specimens of the bed of the sea from very numerous points, not only along the proposed line of tunnel but other probable lines, have led to the adoption of the present line, and show that the tunnel can be made almost entirely, if not entirely, through the lower chalk.

Not only is it not the fact that 30,000 pence have not been spent in showing there exists even a *prima facie* case, as stated in the article, but the investigations above alluded to, and others, and trials of machinery, have cost several thousand pounds, which have been furnished by the originators of the undertaking.

The engineers never proposed to drive a driftway to the Varne Bank as stated.

The *public* are not asked to subscribe as stated. Subscriptions are expressly asked only from a comparatively few wealthy individuals, and the originators of the enterprise have already subscribed a considerable proportion of the required capital. The object in forming a limited liability company is not to raise money from the public, but to secure the private contributors from any possible demands beyond the amount of their subscriptions, and to lay the foundation of the organisation necessary for carrying out the undertaking to completion. Neither the committee of management nor engineers derive any benefit from the present capital. They carry on the work as they have already carried on the investigations (the committee and engineers having been working together for several years) unpaid.

The article advises the sinking of a deep well on the coast to test the strata. There is more than one well sunk to a depth of 300 ft. through the chalk, and without finding water;—Harwich, Crossness, Calais, &c. The borings for this tunnel at St. Margaret's Bay, near the South Foreland, were carried down 540 ft. below high water through the chalk into the green sand; the boring on the opposite coast, near Calais, was carried down 520 ft. below high water into the lower chalk. These borings showed that on the proposed line of tunnel the depth of the chalk on the English side is 470 ft. below high water, viz., 175 ft. of upper chalk, 295 ft. of lower chalk; and on the French coast the depth of chalk is 750 ft. below high-water mark, consisting of 270 ft. of upper chalk and 480 ft. of lower chalk; and the soundings in the Channel by which the bed was pierced for a short distance made it appear probable that there is no great fault or serious interruption in the strata between the two shores in the proposed line of tunnel.

As to the time of execution the originators of the proposed tunnel have made trials of machinery of full working size and in the material to be tunnelled through. They have driven a heading of 7 ft. diameter in the lower chalk at a speed of 18 yards forward per 24 hours with *half* the power of the machine. The machine not only cuts the face, but loads the spoil into wagons. Working from each end this is equal to a speed of 6¼ miles per year at half the capacity of the machine.

Generally it may be assumed that engineers of such high repute and great and varied experience as the engineers of this company would work out all the details of an undertaking of this nature and hardly leave out of consideration such primary questions as haulage, liftage, pumping, ventilation, and the like, all of which are matters of daily consideration and calculation, not in railway works only, but in the mining operations, which are not a novelty in England either under land or sea, and to which latter this undertaking is kindred, differing only in the fact that no carboniferous or metalliferous deposit is being sought, and that the operations will be carried on in an unusually safe and workable stratum.

It will be seen, therefore, that "investigation" has been carried to its utmost limit, and the work proposed by this company, which, if it meet the success expected, will form part of the complete tunnel, is a careful and well-considered step towards carrying out the undertaking to completion.

THE SECRETARY OF THE COMPANY.

NON-CONDUCTORS OF SOUND.

SIR,—Will any of your readers let me know whether sand or sawdust is the best non-conductor of sound, or how I may prove which is in a simple manner? The case is supposing them to be both dry and *weight for weight*, distributed over equal surfaces.

Perhaps some other inexpensive material may be suggested as better than either.

M.

FLOORS AND DRY-ROT.

SIR,—Can any of your readers tell me whether a 3-in. close-joisted deal floor, laid on joists 5 ft. apart, the space between the joists filled up with cement concrete, flush with the top of joists, &c., 8 in. thick before the floor is nailed down, will "be quite free from the dry-rot?" The ground is very dry.

"THREE-INCH DEAL FLOOR."

AS TO A NEW STYLE.

SIR,—If your numerous correspondents and contributors who write upon this subject with ideas no more advanced than those which prevailed twenty-five years ago, would turn to the *Builder* for December 25, 1869, they would find the matter discussed.

W. S.

"LES ARCHITECTES ONT TOUJOURS TORT."

"The union workhouse, we are told, is the proper hospital of the sick poor. Where else can he have such attendance, such medicine and proper food, and such sanitary arrangements? We may or may not be prepared to answer this question, but one thing is certain. It will be necessary to rebuild our union workhouses, or at least their sick wards; and we all know what building means. It means incalculable cost, and almost certain failure."

This is from the *Times*, 31st January, 1872: on the new "Broad rules" recommended by the Local Government Board,—

A pleasing new version, as my architect-readers will notice, of—"the *safest* thing you can do is ——to do nothing"; a now-slightly-discountenanced moral maxim (commonly attributed to Lord Melbourne),—

DECIES REPETITA PLACEBIT.

METROPOLITAN IMPROVEMENTS.

THE improvements projected by the Metropolitan Board of Works have been reported on to the City Sewers Commission by their Finance and Improvement Committee, basing upon a report to them by Mr. Haywood, engineer and surveyor to the Commissioners.*

The Finance Committee, in their brief report, say:—

"As a summary of our opinion after careful consideration of these various projected improvements, we consider that the streets proposed by the Metropolitan Board of Works will relieve the present enormous traffic of the City to a very limited extent, and that a line of street from east to west might be formed through the City, north of the Bank, which would accomplish this most desirable object in a more efficient and satisfactory manner.

In respect of the important question, which the engineer has introduced, suggesting the construction of a new bridge to cross the Thames, east of London Bridge, as 'it does not come within our reference, and the whole of the work to be effected would be outside the City of London,' we express no opinion thereupon."

The series of proposed improvements reported on are summarised by Mr. Haywood as "Improvements in Wapping; Shoreditch improvements; Old-street, towards New Oxford-street; Harrow-road improvement; Newington Butts improvement."

In respect to the chief of these improvements, that of Old-street towards New Oxford-street, Mr. Haywood says:—

"Much of the traffic between the east and west of the City goes to districts south of the lines of the thoroughfare proposed by the Metropolitan Board, much of it to but short distances north of the City; *thus any new thoroughfare intended to relieve Leadenhall-street, Fenchurch-street, Cornhill, Cheapside, and Newgate-street, will utterly fail in its object if it be far north of the Bank*, for heavy traffic will not go a long way round. Passenger traffic needing to approach the centre would not be carried far away from that centre; omnibuses will not go from the places where passengers abound; and one proof that a street so far north as that proposed will not relieve streets within the City is, that the line from Whitechapel, along Commercial-street, Brushfield-street, Sun-street, Chiswell-street, Long-lane, and Charterhouse-street, forms now a thoroughfare much nearer than that proposed by the Metropolitan Board of Works; and as it connects with all the northern roads on its line, the traffic which goes northwards can take that route, and yet the streets in the City are in their present crowded condition. It is certain, therefore, that a new route so far north as that proposed can have no beneficial effect upon the City streets."

The new line of street to which the Finance Committee refer is one proposed by Mr. Haywood in 1866, he says, after a careful survey and due consideration. It is thus described in Mr. Haywood's report:—

"It would start from the eastern end of the Holborn Viaduct, and be carried eastwards across King Edward-street and St. Martin's-le-Grand (north of the General Post-office), across Noble-street, Wood-street, Aldermanbury, Basinghall-street (north of Guildhall), and Coleman-street to Moorgate-street, at a spot about 250 yards north of the Bank.

Then passing Little Bell-alley and Sadlers'-place to the end of Blomfield-street; and then by way of London Wall and Wormwood-street (which streets, being widened, would form part of the line of thoroughfare) to Bishopsgate-street Within; thence across Houndsditch and Middlesex-street to a junction with Whitechapel High-street, opposite the Commercial-road, which would be a continuation of it; and the whole would form a road leading in nearly a straight line from Holborn Viaduct to the Docks.

The width of the street should be 70 ft. or still better, 80 ft. Its length would be 2,266 yards, and the present distance from the western end of Newgate-street to Whitechapel, and thence to the north end of the Commercial-road, is 2,383 yards, and the new route would therefore be shorter than the existing one by 117 yards."

The report of the Finance Committee has been adopted by the City Sewers Commission, who will take a *locus standi* in the matter, reserving power to oppose the scheme of the Metropolitan Board.

SOCIETY FOR THE ENCOURAGEMENT OF THE FINE ARTS.

LAST week a lecture was delivered before the members of the Society for the Encouragement of the Fine Arts, at the Lecture-hall, 9, Conduit-street, on the subject of "Light and Colour," by Mr. William Spottiswoode, M.A., F.R.S. The chair was occupied by the Chancellor of the Exchequer. The lecture was illustrated throughout by experiments, conducted with the electric light, showing the combinations of colour proper, the different rays of light to be found in the spectrum. At the close of the paper the Chancellor of the Exchequer said,—One remark strikes me as resulting from the lecture, and that is, how very difficult it is to know in this world what is simple and what is complex. This sheet of white paper which I hold in my hand looks the most simple thing in the world, and yet it is a very complex result of a great many things of which we have little conception or idea. Instead of being the beginning of the simple, it is the end of a large number of combined and complex elements which go to make up what you see here. Well, that is just like science. It begins by being difficult, but as you rise higher and higher in knowledge you will find that the difficulties with which you were at first met resolve themselves into very simple laws. That which appears to be simple in nature frequently, when examined, turns out to be exceedingly complicated; while that which appears to be complicated and perplexing often, when followed up, ends in absolute simplicity.

* Report from the Finance and Improvement Committee to the Hon. Commissioners of Sewers of the City of London upon the proposed Metropolitan Improvements of the Metropolitan Board of Works. And Appendix, containing the Engineer's Report upon the same, with Plan. January, 1872. Judd, Printers, Doctors'-commons.

THE WATER SUPPLY OF SOUTH LONDON.

THE medical officer for Lambeth, Dr. M'Cormack, having examined the Lambeth water drawn from the main at Kennington-cross, and that of the Southwark and Vauxhall Companies, says:—

"Having examined the waters by the two most modern and delicate processes, and having got results by both which confirm each other in a most striking manner, I have no hesitation in reporting that both waters are totally unfit for human consumption, and are little better than merely extensively diluted sewage. Of the two the Lambeth water was a trifle worse than the Vauxhall, but both were much worse than many waters which have been already condemned and the wells closed. The analysis clearly showed that the company's filters have been completely overmatched by the late floods, and have been totally unable to remove even the suspended impurities, and we have simply been drinking the sewage matters and living organisms produced and poured into the river by all the town and farm drains along its banks; it is a little wonder that we are sickly, but it is a great wonder that so many of us have escaped disease."

THAMES SEWERAGE COMMISSION.

AT Kingston-on-Thames, an influential meeting has been held for the purpose of receiving information from Mr. Bazalgette, as to his plan for purifying the river between London and Windsor from sewage. Mr. Peek, M.P., was voted to the chair. Since the passing of the many Thames Navigation Acts, the inhabitants of the towns and villages in the valley of the Thames have experienced difficulty in disposing of their sewage; and, in order to carry away its united bulk to lands where it will not generate disease. The area to be dealt with embraces about 100 square miles, containing a population of about 300,000 persons. Mr. Bazalgette proposes, in the first place, to purchase and adapt about 3,000 acres of inexpensive and almost uncultivated land between Woking and Bagshot, to which sewage might be applied on the principle adopted at Croydon and other places. The sewage would be conveyed by natural gravity from Acton, Chiswick, Ealing, Hanwell, Brentford, Isleworth, Barnes, Mortlake, Kew, Richmond, Twickenham, Mitcham, Merton, Malden, Morden, Wimbledon, Teddington, Kingston, Hampton, Esher, Thames Ditton, Moulsey, Walton, and Weybridge, to Hampton, where it would be conveyed by pumping engines, and again flow by gravity till it arrived at Chertsey, receiving on its route the drainage from Sothall, Norwood, Heston, Hounslow, Hunworth, Sunbury, Laleham, and Shepperton. Other main sewers, commencing at Eton and Windsor, would bring the drainage from Windsor, Datchet, Old Windsor, Horton, Colnbrook, Egham, and Staines, also by gravity, to Chertsey, where a regulating reservoir would be formed, and where a second pumping station would raise the united volume to a reservoir at the head of the proposed farm, on, to, and over which the sewage would ultimately flow. The total cost is estimated at 680,000*l*. The rainfall from the local sewers would, in general, be excluded. To carry out this plan, a Board of Commissioners, elected by the parishes interested, would be proposed. The promoters allege that the scheme would give relief from the penalties under the Thames Navigation Acts, and a cheap and effectual method of disposing of the sewage at a distance. Preliminary steps have been taken to submit the scheme to Parliament in the present session. In the end of the meeting, it was unanimously resolved,—

"That this meeting is not sufficiently informed on the many questions and conflicting interests involved in the plan as briefly laid before it, and is not prepared to express an opinion thereon without further consideration."

Mr. Slagg, a resident engineer, objects to the scheme of the Thames Sewerage Commission, that—

"It is wrong in principle to combine many town

together for the purpose of disposing of the sewage. The true principle is, in my opinion, *dispersion*, and not *concentration*, of sewage. The principle of this proposed measure is that of the combination of many towns for the purpose of conveying all the sewage to one place. That seems to me a needless work. That it would be a very expensive work may be seen when it is considered that to enable this scheme to be carried out for the estimated amount of 680,000*l*., the whole of the rainfall must be excluded from the sewers, and for that purpose a set of drains must be laid in every town, both in the streets and through to the backs of the houses."

Mr. Slagg states that when it was proposed to adopt this "separate system" in London, Mr. Bazalgette himself, in reading a paper at the Institution of Civil Engineers in the year 1865 on the "Main Drainage of the Metropolis," objected to it; but Mr. Bazalgette says he was misunderstood, and disowns the objection.

DWELLING HOUSES.

Dr. Hime recently read a paper before the members of the Sheffield Architectural and Archæological Society on "Dwelling Houses." After some introductory remarks, the doctor said:—

The great object of sanitary legislation is to secure for each individual the greatest amount of fresh air, pure water, sunshine, and dryness of soil. Public sanitation in towns should provide for the people width of streets and their paving, the removal of fluid and solid nuisances from them, and (a most important matter) the establishment of unoccupied places to facilitate the circulation of air, and serve for breathing and recreation resorts for the inhabitants. The width of the streets is of great importance in relation to the height of the houses. The width should never be less than the height of the houses. The healthiest sites for dwelling-houses are known to be those on trap, granite, and other metamorphic rocks, where water readily escapes, and the soil, and consequently the air, are dry. Cholera is rare in houses on such sites. Permeable sandstone, gravel, and chalk, if unmixed with clay, are also healthy. Sands which contain organic matter, clay, and alluvial soils are always to be suspected. Thorough draining, both subsoil and surface, is a necessary preliminary to building. Dampness of ground necessitates dampness of air and of the walls. This causes chemical alteration in the organic materials in the houses, with absorption of oxygen and discharge of other gases; it favours, too, the growth of low animal and vegetable organisms, which poison the air of the dwellings, and produce disease. The decomposition of the organic contents of the soil is hastened by its dampness, and especially by rapid alterations of its hygrometric state, which is, perhaps, the chief condition of outbreak of cholera. Building materials should have great solidity, be bad conductors of heat, and be in a good hygrometric state. Calcareous stone is best,—some sandstone is so porous that, though dry to-day, it may be soaked with damp to-morrow. Houses should never be built on ground filled up with ashes and other *débris*. The large amount of organic matter contained in it, which is freely exposed to the action of the air and moisture, becoming decomposed, must cause poisonous emanations, destructive to those who, living above, must breathe it. The drainage and other pipes laid in this soil is extremely liable to be entered by these poisons, and thus they are conducted into houses directly. Frequent sweeping and washing are necessary in every house. Dust is not alone unpleasant, but it is a fruitful source of disease,—perhaps the most so. The dust of curtains, carpets, papers, and other coloured substances, consisting of organic and colouring matter, being swallowed with the food and inhaled, causes many a doctor's visit. Every house should have a kitchen and wash-room distinct from the dwelling-rooms. The latter should be large enough to allow of each inhabitant obtaining 10½ cubic feet of fresh air per hour when doors and windows are shut. Each house should have abundance of good water for drinking, cooking, and washing, including bathing: five to six pints per day should be allowed for drinking, at least eighteen gallons for washing, and eight to ten should be used daily to flush the sewers. Sick people require more,—from forty to fifty gallons daily. Water-closets consume various quantities, according to their construction. The nature of the closet and the method of removing the contents have become one of the most important questions which advancing civilisation has created. The dry earth system is quite inapplicable to large towns; it suits private houses of the rich or jails well. The Goux system is equally unsuitable. The water system, where there is a plentiful supply of water, is infinitely the best and the cheapest. A sufficient fall of ground can nearly always be obtained. The improvement of the dwelling-house and the establishment of comfortable homes worthy of human beings is a necessary duty of the State and a noble work for the philanthropist. These necessary conditions may be advantageously supplemented by a little comfort and elegance. A little garden is a civiliser of great power.

LONDON ROOKERIES.

My attention has been directed to your article bearing the above title, in your issue of the 20th ult., and I beg to bear witness to the important suggestions contained therein. These rookeries should be,—I might say must be,—swept out of London. My experience is mostly confined to the "fifty acres of courts and alleys all in a mass between Aldersgate-street and Bunhill-fields, opening out of Upper Whitecross-street, Golden-lane, &c." If I were to pen what I have seen in this neighbourhood you would refuse to publish it. Imagine the worst of dirt, squalor, misery, and vice, and you cannot approach the facts. They are much worse than the human mind, not accustomed to seeing these things, can imagine.

All this property lies in the parish of St. Luke, Middlesex. The vestry and parishioners now possess the power to remedy such a condition, but they refuse to do so. The medical officer has reported that much of this property should be registered and kept healthy by means of the 35th section of the Sanitary Act, 1866. The Vestry have refused to adopt it. An effort was made a little time since to carry out the suggestions made in your article, namely, to pull down, open out new streets, and to build model lodging-houses on the ground. The promoters were immediately put into disgrace, the prime mover thrown off the committees, and the public were assailed with falsehoods, and deceived. Why is all this? The facts are plain. In the parish many members of the vestry are holders of this squalid property, and their friends, publicans, brokers, and the like. They meet at a public-house, where the important work of the vestry is often settled. Surely, when the health of over three millions of people is jeopardised in this way, some action should be taken by the central authority.

While such places exist the School Board is almost a farce: they can do nearly nothing: physiological laws are all against them.

Your article mentions that it would be necessary to obtain an Act of Parliament. I think it is not at all necessary. The vestries now can, in conjunction with the Metropolitan Board of Works, open out new streets, while the following Acts of Parliament,—14th & 15th Victoria, cap. 34, "An Act to encourage the Establishment of Lodging-houses for the Labouring Classes"; 30th Victoria, cap. 32; and 31 & 32 Victoria, cap. 130, "An Act to provide better Dwellings for Artizans and Labourers,"—are sufficient for the purpose.

The Act 29th Vict., cap. 28, gives the parishioners the power to raise funds on most favourable terms, for carrying out such improvements.

All, therefore, which is required is a will. This with the powers which are dominant does not exist. No doubt, the action of these vestrymen is calculated to bring local self-government into disrepute, and will ultimately break up the present system of vestries; but these men do not seem to have the capacity to perceive this. In the interest, however, of the parishioners and of the metropolis, it is necessary that such a state of things should be speedily put a stop to, and with that view I am glad to see your valuable paper lending its aid.

Frederick Hovenden.

CHURCH-BUILDING NEWS.

Kirby Underdale, near York.—The chancel of the church here has just received an additional ornament by the erection of two stained-glass windows, and the decoration of the organ-pipes, by Mr. J. W. Knowles, of York. The windows are of two lights, with quatrefoil tracery, and in each light under a canopy of early character, is represented a figure of one of the Evangelists standing upon an arched base, in which is its respective emblem. The organ-pipes have been diapered with ornament of a conventional character, in green, red, and gold, upon a buff ground, the ornament being divided occasionally by horizontal bands of blue and gold.

Petersfield.—A meeting to consider the question of the restoration of the parish church has been held at the townhall. The Bishop of Winchester presided, and strongly urged the importance of the undertaking. Lord Hylton moved, and the Rev. J. M. Sumner seconded, a resolution, which was passed, that the meeting regretting the present unseemly state of Petersfield church, undertakes its restoration at the earliest possible period. Mr. Blomfield (who designed the newly-erected church of St. Mary, at Sheet) has been appointed as architect, and that gentleman will at once be requested to furnish a detailed report of the present state of the church, and a scheme for its restoration.

Loddon.—The parish church here has been restored. The chancel has been restored at the cost of the Ecclesiastical Commissioners, and under the direction of their architect, Mr. Ewan Christian. The floor has been laid by Mr. Nursey, of Bungay, with tiles, in chocolate lozenges on a red ground, with figured yellow centres and borders; the pavement of the sanctuary being of smaller tiles, with a dark green border on the stone steps. The Communion-table has been raised on a foot pace, and new seats of oak (executed by Mr. H. Ward, of Loddon) have been placed on either side of the chancel. Boarding has been inserted between the rafters and the lead of the roof, and the windows have been repaired. The cost has been about 370*l*. The remaining work already done (partly by money collected by the vicar, partly by money derived from a farm left for the use of the church), at a cost of about 500*l*., comprises the repair of the roof of the north and south aisle, and the lighting by means of gas-burners, arranged on the capitals of the pillars, the repair of the east window, the restoration of the woodwork of the panels at the base of the screen—once painted and gilded—and the laying of the passage in front of the screen with a copy of the original tiles. The pews have been lowered, as a temporary arrangement. This has been done under the direction of Mr. Thomas Jeckyll, by Mr. B. W. Spaul, of Norwich, and Mr. H. Ward, who repaired the roof. The work immediately to be done is the opening of the tower-arch, the restoration of the tower window and roof, the removal of the organ to the end of the south aisle, where a vestry will be constructed; and the repair of the organ. Other work necessary and in contemplation is th restoring of the old benches, repairing and reglazing the old windows, relaying the passages with tiles, restoring the south porch, and scraping the colour-wash off the columns and walls—which will involve an outlay of nearly 1,000*l*.

Cambridge.—It has been resolved to continue the restoration and enlargement of St. Benedict's Church. Plans by Mr. Brandon, architect, have been exhibited to the vestry.

Castle Hedingham.—The parish church, after partial restoration, has been re-opened. The chancel was restored in 1870, and it was resolved by the parishioners that the nave should be suitably restored, so as to accord with the chancel, and this was rendered the more necessary as part of the building was actually unsafe. The efforts to raise subscriptions have been attended with fair success, nearly 400*l*. having been collected from residents and landowners in the parish itself, and about 350*l*. from friends outside. Although this is far short of the original estimate, which amounts to 1,200*l*., yet much has been done. The work of restoration, which has been going on during the past five months, has embraced the entire rebuilding of the wall between the porch and south-east angle of nave, with new windows, &c.; the repair and renewal of all the windows; the repair of all the stonework of pillars, round the doors, &c.; plastering throughout; the paving of the whole nave with Peake's tiles; and the warming with hot air. For the present the seats are chairs, as the funds will not yet admit of the expense of wooden benches. The doors have been, on the inside, recased with oak. The gallery at the west end has been removed, and several objects of interest discovered in the walls have been restored. Besides the question of benches, there is the more imperative necessity for the repair of the battlements and tower, the repointing of the north wall, the restoration and improvement of the west window (the only one that remains to be done), and the purchase of a new pulpit. The

architect employed has been Mr. H. Woodyer, of Guildford; and the builder, Mr. Rogers, of Earls Colne.

SCHOOL-BUILDING NEWS.

Birmingham.—The proposed schools at Bloomsbury are to be built on a site which has one frontage to Lingard-street and one to Goodrick-street. The area of the site is about 4,000 yards. The buildings will be placed at the northern end of the ground, so that both the school-rooms and the playground will get as much sunlight as possible. The schools are intended to accommodate 1,000 children, viz., 400 infants, 350 boys, and 250 girls. The infants' school will front to Lingard-street, and will form a distinct and separate building. The boys' school will front to Goodrick-street, and will be on the ground-floor. This building will be of two stories, the girls' school-room being over that of the boys. The boys will enter their school from Goodrick-street, and the girls and infants from Lingard-street. The arrangement of the boys' school is as follows:—A porch or lobby is placed at the north end of the school-room, and on the right hand of the porch is a large cloak-room and lavatory, and a staircase, which leads to the master's private room or board-room, which is placed in an upper story over the cloak-room and lavatory. To the left of the lobby is the door leading into the school-room. The school-room is formed of three blocks or parallelograms, arranged like the letter E, the middle arm of the E being omitted. The end blocks are each 20 ft. wide and 45 ft. 9 in. long, the middle one being of the same width, but 50 ft. long. The space between the two end blocks is filled up by three class-rooms, each room being 16 ft. 3 in. wide and 19 ft. 6 in. long. The general shape of the school-rooms and class-rooms, taken together, may be roughly described as a parallelogram, whose outside dimensions are 93 ft. in length and 49 ft. in breadth. The clear height of the schoolroom is 15 ft. 9 in., and that of the class-rooms 14 ft. 9 in. The whole of the rooms are arranged so that the head-master can see every part of them without moving from his desk, and thus not only the school-rooms but also the class-rooms will be under constant supervision. The plan, while fitted to the present system of teaching, can at any time be modified without expense, so as to increase the number of class-rooms, should the plan of dividing the children into distinct classes and instructing them separately be adopted. The girls' school-room is placed over the boys', but consists of two blocks only, the third block being occupied by the cloak-room and lavatory, and the mistress's private room. There are also three class-rooms, as before. The whole of these rooms are ceiled about half-way up the roofs, the total height in the clear of the schoolrooms being 20 ft., and that of the class-rooms 17 ft. The superficial area for each child will be about 11 ft. in the school-rooms, and nearly 9 ft. in the class-rooms. It is proposed to warm the whole of the buildings either by hot air or with hot water; and, except in the private rooms, there will be no fireplaces. The whole of the rooms will be carefully ventilated. The buildings are to be of brick, with tiled roofs; the floors of the school-rooms and class-rooms of wood. The windows will probably be of iron, and will be glazed with thick glass. There will be no skylights in any part of the buildings. The staircase to the girls' school will be of stone. The infants' school is a one-story building, with entrance-porch, large cloak-room and lavatory; a nursery, 22 ft. long and 23 ft. wide; a principal school-room, 60 ft. long by 32 ft. wide; and a cloak-room, 22 ft. long by 25 ft. in width. All these rooms will be well lighted and lofty. The play-grounds are separated from each other by a wall, and the out-offices are arranged in a convenient manner. The architects are Messrs. Martin & Chamberlain, of Birmingham.

Dorchester.—The new girls' and infants' schools have been opened by the Bishop of the diocese. The schools, built by Mr. G. Wheeler, from plans by Mr. G. G. Scott, architect, have been erected as a joint memorial, at a cost of about 800*l.*, of which sum the vicar, the Rev. W. C. Macfarlane, has given 450*l.*, and Miss Macfarlane 100*l.*, to the memory of their late aunt; and Mrs. Cook (wife of Mr. W. Cook, churchwarden), 100*l.* to the memory of her sister, the late Miss Wallis, and 100*l.* as her own donation. Several other sums have been given, which are almost sufficient for the purpose.

Bromyard.—The Church of England schools, recently erected in the parish of Thornbury, have been opened. They are built near Thornbury Mill, about half a mile from the Wall Hills, on the summit of which are vestiges of a British encampment, supposed to have been constructed by Caractacus. The schools are intended to meet the educational requiremements of the following parishes:—Thornbury, Edwin Ralph, and a portion of Collington.

Monkton, Kent.—For new schools for the parish of St. Mary Magdalene, Monkton, Mr. William E. Smith, of Upper Bedford-place, London, architect, Mr. Cephas Foad's tender (665*l.*) has been accepted.

Books Received.

"The Civil Engineer's Pocket-Book," by John C. Trautwine, C.E. 1872. (Trubner & Co.), treats of Mensuration, Strength of Materials, Bridges, Cost of Earthworks, Foundations, &c., and elucidates some important principles in construction. It is a very valuable little book—a cyclopædia in miniature.——"The Charity Organisation Reporter" is the title of a publication, issued weekly by the Society for Organising Charitable Relief and Repressing Mendicity. It does not profess to be a newspaper, but proposes to report so much of the proceedings of the Charity Organisation Society as is likely to be of interest to members of its district committees and of similar agencies in the country, and to its supporters generally. It will also bring together information relating to the removal of causes of pauperism and bearing on the elevation of the poorer classes.——A paper "On Customary or Local Measures of Land in the British Isles," read by Mr. Joseph Boult, at the Liverpool Architectural Society, in November last, has been published in the Transactions of the Society. —— Under the title, "Spiritualism answered by Science" (Longman & Co.), Mr. Serjeant Cox replies vigorously to the disingenuous attack made on him by the writer on this subject in the *Quarterly*. The learned Serjeant had clearly stated that he found "no evidence tending to prove that the force [whatever it may be] is other than a force proceeding from or directly dependent upon the human organisation," and he declines, therefore, to be termed a convert to "Spiritualism." It is quite time that the matter was investigated scientifically, and the ground on which charlatans stand knocked away from under them. Serjeant Cox deserves credit for the steps he has taken in this direction.

Miscellanea.

The Abolition of Tolls on Waterloo Bridge.—A crowded meeting has been held at the Lambeth Baths for the purpose of considering the abolition of the tolls on Waterloo Bridge and other metropolitan bridges. Mr. W. M'Arthur, M.P. (in the chair), stated that during the last six years 5,000,000 persons annually passed over Waterloo Bridge, the income from which amounted to 21,000*l.* per annum, and that since the opening of the bridge the sum of 851,760*l.* had been received by the company. Mr. M'Arthur suggested that the House of Commons be petitioned for an extension of the time to which the coal and wine dues were already mortgaged, and that the money so obtained be applied to the purchase of Waterloo Bridge. Sir J. C. Lawrence, M.P., thought that the best way would be to first free Hungerford Bridge. Half the traffic of Waterloo Bridge would thus be transferred to Hungerford; and, on a valuation of two years' traffic over Waterloo Bridge being taken, it would be found much reduced, and the bridge would consequently be bought for a much lower sum than it would otherwise be. It was unanimously resolved,—"That the tolls on Waterloo and other metropolitan bridges were a heavy tax on the community, highly injurious to the value of property, and detrimental to commercial intercourse, presenting an anomaly not to be found in any other city of Europe or America;" and "That this meeting urges upon the Metropolitan Board of Works and the Corporation of the City of London to confer and communicate with the Government and the Waterloo and other bridge companies with a view to the introduction of a Bill into Parliament for carrying out the foregoing resolution, and that the various metropolitan vestries be called upon to co-operate."

A Big Building for Boston (U.S.).—The *Boston Commercial Bulletin* states that it has been determined to erect there a building of "proper size" for great meetings. "The ground plan is to be a parallelogram, 822 ft. in length by 422 ft. in width, measuring 347,506 square feet in area, or a trifle less than 8 acres. Throughout the space not a single post, pillar, or support of any kind will obstruct the view from end to end. The roof, consisting of a double system of self-supporting trusses, will spring in a gentle curve directly from the foundations, constructed on piles, driven 35 ft. into the ground, the two segments meeting at the ridge and forming a graceful arch, at an elevation above the floor, of 172 ft. Similar segments will spring from the ground at either end, uniting with the side segments, forming an immense Mansard pavilion, with the graceful lines peculiar to that style of architecture. The trusses supporting these end segments of the roof will run the entire length of the building, having a clear span of over 800 ft., and knitting the whole roof into a substantial self-supporting structure. From the foot of the arches on either side and end will rise perpendicular buttresses, 53 ft. high, at which elevation the curve of the trusses will leave a space of 18 ft. between the outer line and the line of the buttresses. This space will be floored, forming an outside promenade, with an elevation of 50 ft., a width of 18 ft., and a total length equal to double the combined length and width of the building, or half a mile."

Dedication of the New Freemasons' Hall, Bristol.—The building in Park-street formerly used as the Philosophical Institution and Museum was recently purchased by the Freemasons of Bristol, and it has been solemnly dedicated to the purposes of the craft. The premises have been decorated throughout. The upper floor, formerly used as a museum, has been set apart for the grand hall, and suitably arranged and embellished. Above the gallery at the end of the hall hangs a portrait of the Duke of Sussex, late Grand Master of the Order in England. At the western end is an organ, standing on a platform. Adjoining the grand hall is a chapter-room, and "the preparing room," in which neophytes are prepared for initiation. A reception-room is also provided. On the ceiling of the staircase are paintings of Justice, Fortitude, Temperance, and Prudence, executed by Mr. Bird, R.A., and which formerly adorned the ceiling of the old hall in Bridge-street. Mr. Diment, builder, Mr. Eastabrook, carpenter, and Mr. Hunter, gasfitter, have been employed in fitting the premises for occupation by the Masons; and Mr. Vowles has renovated the organ.

The "Scotsman" and the Walter Press. The Walter Press, invented by Mr. J. Macdonald, the manager of the *Times* printing establishment, is now used in printing the *Scotsman* newspaper. A reel of tightly-rolled paper, in the form in which it leaves the paper-mill, fully four miles in length, and weighing nearly six cwt., is placed at one end of the machine, and in the process of unreeling is damped, printed first on one side then on the reverse with unfailing precision, is cut into sheets, and delivered at the rate of fully 12,000 copies per hour at the other end of the machine. The sole attendants necessary are two lads at the delivery boards, and a third, the striker, who starts the machine and looks after the rolls as they are unwound. While printing, the paper travels through the machine at the rate of nearly 1,000 feet per minute, and a reel four miles long is thus printed in less than twenty-five minutes. The delay in changing from one reel to another scarcely exceeds a minute, so that the production is thus almost continuous. With the two Walter presses in the *Scotsman* office, thirty-six miles of paper are printed each morning in two hours, and on Friday, when the *Weekly Scotsman* is also printed, the length of paper used is about eighty miles.

London and County Bank.—At the meeting of the London and County Bank, the report showed an available total of 102,548*l.*, including a previous balance of 4,449*l.*, and a dividend was declared of 6 per cent., with a bonus of 3½ per cent. (together, 1*l.* 18s. per share), making, with the June distribution, 18½ per cent. for the year. For the previous year the distribution was 17½ per cent. The deposits held are 16,116,730*l.*, an increase of 2,720,479*l.*; and the acceptances are 2,778,016*l.*, a decrease of 332,105*l.* The paid-up capital is 1,000,000*l.*, and the reserve 500.000*l.*

National Music Meetings at the Crystal Palace.—The arrangements for the first series of national music meetings, to be held at the Crystal Palace during the ensuing summer, are progressing satisfactorily. At these meetings, native and foreign choral societies, glee, madrigal, and part-song vocalists, cathedral and church choirs, military and volunteer bands, and amateur solo singers will be invited to compete for prizes, some of them considerable in amount. The project seems to us to deserve the hearty support of the public. It is intended that the meetings shall be held on five days during a fortnight at or about Midsummer in each year: and a council will be formed, consisting of eminent authorities in music, from which body the competitors for the different prizes will elect a jury by ballot. The greatest care must be taken in forming the tribunal: any failure in justice would greatly interfere with the success of the scheme. The total amount of the prizes will be 1,500*l.*

Accidents.—The engine of a Midland goods-train had just passed over the bridge east of Castle Ashby Station, when the main buttress gave way, and the bridge fell. The tender and more than twenty wagons were thrown over on to the line, but none of them fell into the river. The bridge was afterwards inspected by Mr. Woodhouse, the company's chief engineer. The accident was owing to the great rush of water against the buttress, the brickwork of which appeared to have been twisted completely round. A minute or two before the accident occurred an up Midland goods-train passed over the bridge; and if the two trains had met, as they sometimes do, on the bridge, the whole of it must have fallen in.——A large piece of masonry from the Castle of Vert Port Nice, was blown down on Friday week, and fell on a house, killing one person, and injuring seven others.

Testimonial to a Sanitary Inspector.—At a special meeting of the sanitary committee, St. Luke's, City-road, a handsome testimonial, inscribed on vellum, and mounted in a carved and gilded frame, was presented to Mr. James Neighbour, the sanitary inspector. The testimonial recorded that at a meeting of the vestry, held at the Vestry-hall, City-road, on Tuesday, the 3rd of October, 1871, Mr. Churchwarden Patten in the chair, it was resolved unanimously, that the sum of 20 guineas be awarded to Mr. James Neighbour, the sanitary inspector, as an acknowledgment of the extra services performed by him during the late epidemic of small-pox, and that he be also presented with a copy of this resolution on vellum, in testimony of the appreciation by this vestry of the mode in which he has discharged his duties.

The Proposed New Market and Buildings, Leicester-square.—The company which has been formed for the erection of a new market close to Leicester-square, near Coventry-street, include in their plans a proposal to build on a portion of the square, dividing it into wide and spacious streets, leaving about half the area of the square open and still unbuilt upon. It is suggested that the site and the property in the locality will be enhanced in value by the opening of a fruit and vegetable market on the side of Coventry-street, with two entrances from the last-named street, and platforms underneath, connected with the new railway which is about to be constructed, so as to unite the Euston with the Charing-cross and Waterloo Stations. All the requisite plans in connexion with the company's proposed works have been duly deposited with Parliament.

A Statue of George Kinloch.—Lord Kinnaird has unveiled at Dundee a statue which has just been erected to commemorate the political life of George Kinloch, of Kinloch, who, in consequence of his intrepid advocacy of political rights, was compelled to flee the country nearly forty years ago. Great difficulties were at first thrown in the way of erecting the statue, but ultimately the town council gave a site. The work was executed by Mr. Steell, of Edinburgh, who is a native of Dundee.

Fall of an Archway.—On Tuesday last, an archway in course of construction in Messrs. Parker & Sons' spinning-mill, Dundee, gave way, and six men who were working on the top were precipitated to the ground. They were all more or less injured, two of them having received wounds which are likely to prove fatal. The accident was caused by the breakage of one of the tie-rods.

Vehar Waterworks Extension, Bombay. A "Report on the Toolsee Valley as an Auxiliary to Vehar, by Rienzi G. Walton, C.E., Acting Executive Municipal Engineer; and Remarks thereon by Thomas Ormiston, M. Inst. C.E. (Bombay: printed at the Educational Society's Press, Byculla: 1872)" has been issued. The acting municipal commissioner, Mr. T. C. Hope, basing on the report and remarks of these engineers, says, in a letter to the clerk of the peace:—

"My own opinion after visiting the locality is that Toolsee should be utilised as an increase to the gathering ground of Vehar to the utmost extent of which it is capable,—namely, to that of the third or largest of the three projects, but that it would be a mistake to attempt to make it anything more; that is, an independent supply either for annual use, or in the event of the Vehar dams bursting. For the latter purpose it is too small, and the money which would be necessary to connect it with Bombay direct, would be far better reserved for a totally separate reservoir of far larger dimensions elsewhere."

About 4 lacs of rupees appear to be the anticipated cost. Mr. Walton estimates it at less, and Mr. Ormston at more.

The Trees on the Thames Embankment.—The Metropolitan Board of Works, at their last meeting, decided to offer a reward of 20*l.* to any person who could give information as to the offenders who have lately busied themselves in cutting—maliciously as was shown—the trees on the Victoria Embankment. A like sum will be given for information likely to lead to the conviction of future offenders. As Mr. Runtz stated, a vigilant and proper police attention should render the committal of these wanton acts impossible. If the scoundrel who has been guilty of this crime (damaging to all attempts to obtain ornamental places of public resort), were detected and pitched into the Thames, we would not cross the road to throw him a rope.

Government Acquisition of the Atlantic Cables.—In a printed statement of the present position of the movement for making the telegraphic communication with America international property, and thus securing a reduction in the rates for messages to one-fourth of the existing tariff, without loss to any one, Mr. G. T. Snead, of Mincing-lane, who is promoting the object in view, states that a Bill will be introduced in the approaching Parliament to enable the British Government to carry out the scheme, either alone or in conjunction with other Governments. This Bill will not include the purchase of any competing line brought forward since the proposition for Government acquisition was made public.

A New Military Prison at Denmark-hill.—Within the last few days the inhabitants of Denmark-hill and Coldharbour-lane, Camberwell, have been thrown into a state of considerable trepidation by the announcement that the Government have determined to erect a huge military prison in the neighbourhood, and that for this purpose 17 acres of land have just been purchased by the Government authorities on the brow of Denmark-hill, in the immediate vicinity of palatial residences and ornamental grounds. A public meeting is about to be held to protest against the erection of the proposed structure on the site which the Government have selected.

Peter the Great.—On Monday last a board bearing the following inscription was put up in the new Foreign Cattle Market at Deptford, by order of the City officials:—"Here worked as a ship-carpenter Peter, Czar of All the Russias, afterwards Peter the Great, 1698." That Peter the Great visited this country is apparently clear enough, but it has not been satisfactorily proved that he worked as a shipwright in Deptford Dockyard. The traditional belief is, however, very strong, and the great Czar's title has been given to a street in Deptford, a very wretched and woe-begone one, and quite unworthy of the name.

The Leicestershire Architectural and Archæological Society.—The annual meeting of this society was recently held in the Town Library, Guildhall, Leicester, the Rev. Assheton Pownall, F.S.A., Rector of South Kilworth, in the chair. After the transaction of business in committee a general meeting of the members was opened, when Mr. North, the hon. secretary, read a report of the committee for the year 1871, and a statement of accounts for the past year; after which the report and accounts were adopted, received, and passed, to be printed in the usual manner. The committee and officers for the year 1872 were then appointed.

A Pleasant Prospect.—The gradual sinking of Nantwich, to which we lately adverted, is attributed by the *Mechanics' Magazine* to "the withdrawal of the lime from the subterranean salt lakes which underlie the town." The slip this winter occurred about the same spot where similar landslips happened one or two years ago. The pit is about 300 yards in circumference, about 100 ft. deep, and its sides are almost perpendicular. The inhabitants much fear that the town itself may ultimately suffer, not by gradual decadence,—that they are used to (it is not uncommon to enter a house from the street into what had formerly been the first floor),—but by one of these sudden collapses.

Royal Gallery of Illustration.—"A Peculiar Family" having been withdrawn, a new musical proverb, "Charity begins at Home," written by B. Rowe, with music by Alfred Cellier, has taken its place, excellently sustained by Mrs. German Reed, Miss Holland, Mr. Corney Grain, Mr. Alfred Reed, and Mr. Arthur Cecil. A novelty by Mr. F. C. Burnand is in preparation, and also a work by Mr. W. S. Gilbert. Mr. Planché's charmingly-written "King Christmas" has proved a great success, and is running glibly and gaily.

Proposed New Theatre and Opera-House, Aberdeen.—A limited liability company has been formed for the purpose of building a new theatre and opera-house for Aberdeen, with a capital of 8,000*l.* The site is in Guild-street. The designs are being prepared by Mr. C. J. Phipps, of London, and will be executed under his direction, jointly with Mr. Matthews, of Aberdeen. The new theatre will seat about 1,600 persons, with standing-room for 200 more, and will probably be completed by next Christmas.

A Hard Cement.—The Abbé Moigno relates a circumstance which may contain a valuable hint in relation to the use of cement. A workman employed to repair the steps leading to a garden made use of Portland cement mixed with finely divided cast and wrought iron filings, or fragments, in place of sand. The result is stated to be that the mass has become so hard as to resist fracture, either with the hammer or pickaxe.

National Railway Association.—Mr. R. Brandon, honorary secretary of the National Railway Association, has just returned from a week's journey in Scotland, whither he had been invited by the provosts of Leith, Dundee, Jedburgh, Hawick, and Dumfries, to explain his scheme for the management of the railways by the State. Mr. Brandon lectured in each of the above-named towns, and resolutions approving of his plan were passed, and branch associations were formed in each town.

Reading Town-hall and Public Offices.—The local council in committee have resolved that "this committee do not deem it desirable to comprise in such buildings any provisions for a new town-hall, or for magistrates' offices, or for a corn exchange or markets," and "that the Public Offices Committee be requested, with the aid of Mr. Waterhouse, to prepare plans and specifications for new buildings, at a cost not exceeding 7,000*l.*"

Intercommunication.—The desirability of forming a tunnel under the river at Gravesend has been suggested, with the view of connecting the present Tilbury and Southend line with the North Kent, and London, Chatham, and Dover lines. By this there would be a continued uninterrupted way between these lines and the Great Western, London and North-Western, Midland, Great Northern, Great Eastern, and Eastern Counties Railways.

Leeds New Bridge.—Mr. Richard Gouthwaite, of Lumby, the arbitrator, has given his decision in the arbitration which was heard at the Town-hall, Leeds, on the 20th and 21st of December, as to the amount of compensation the corporation should pay Mr. William Emsley in respect of his shops and warehouses on the south-east side of Leeds Bridge. Mr. Gouthwaite has awarded the sum of 7,700*l.*

Royal Architectural Museum.—A conference is to be held at the Museum, on Thursday, February 15th, at 4 o'clock p.m., for the purpose of considering the best means of rendering the collection of greater advantage to workmen engaged in trades requiring a knowledge of art. Such a step is much needed.

Museum and Library for Devizes.—The Wiltshire Archæological and Natural History Society have determined to purchase some premises in Long-street, Devizes, for a museum and library, at a cost of 620*l.*, provided that the purchase-money, with an additional sum of 300*l.* for alterations, can be raised by the 24th of February.

TENDERS

For the erection of house and schools at Ewell, Surrey, for Mr. Jas. Hammond. Messrs. Walker & Elsam, architects:—

Mason	£1,034 0 0
Nightingale	1,023 0 0
Thomas	1,023 0 0
Sheppard	994 0 0
Hard	920 0 0
Wagner	880 0 0

For additions and alterations at Walton Lodge, St. John's Wood, for Mr. J. C. Pawle. Mr. W. Todd, architect:—

Benstead & Sons	£645 0 0
Higgs	620 0 0
Langmire & Burge	569 10 0
Blyth	556 0 0
Nightingale	555 0 0
Hackworth & Son	550 0 0

For alterations and repairs to 22, Newgate-street, for Messrs. Turnbull & Co. Mr. Edwin Shales, architect:—

Heeps	£628 0 0
Patman & Fotheringham	589 0 0
Pitcher	530 0 0
Richardson (accepted)	464 10 0

For alterations and repairs to Harford House, Stoke Newington-road, Kingsland, for Mr. S. N. Stowe. Mr. Edwin Shales, architect:—

Anley	£390 0 0
Richardson	359 0 0
Morby & Son (accepted)	330 0 0

For billiard-room, new offices, coach-house, and man's room, to a mansion at Hampton-on-Thames. Mr. Herbert Ford, architect. Quantities supplied by Messrs. Karslake & Mortimer:—

Perry, Brothers	£2,715 0 0
Killby	2,294 0 0
Nightingale	2,211 0 0
Perry & Co.	2,095 0 0
Brown & Robinson	2,040 0 0
Brass	1,997 0 0
Henshaw	1,997 0 0
Higgs	1,987 0 0
Jarrett	1,983 0 0
Gammon & Son	1,983 0 0
Stempson	1,983 0 0
Williams & Son	1,963 0 0
Longmead & Way	1,947 0 0
Scrivener & White	1,895 0 0

For the erection of a warehouse, and repairs and alterations to old premises in Turville-street, Bethnal-green, for Mr. R. J. Chillingworth. Mr. William Mundy, architect:—

	Warehouse.	Repairs.
Beale	£1,058 9 0	£475 12 9
King & Sons	1,076 0 0	426 0 0
Rose	985 0 0	435 0 0
Eaton & Chapman	971 0 0	413 0 0
Marr	1,020 0 0	357 0 0
Christoffer, Brothers	953 0 0	408 0 0
Forrest	937 0 0	397 0 0
Longmead	920 0 0	372 10 0
Blackmore & Morley	872 0 0	379 0 0
Dyer	905 19 9	264 8 11

Royal Pavilion Music Hall.—Messrs. Lacy & Forkington state that they also sent a tender,—1,051*l.*

TO CORRESPONDENTS.

G. L.—S.—J. R. T.—F. M.—C. C.—B. P.—M.—J. C.—G. R.—J. A. K.—G. S.—Mr. B.—F. P.—A. M.—L. & T.—G. G.—B. F.—C. B. B.—J. J. P.—T. W. B.—J. P.—W. H. P.—R. G.—J. B. R.—A. J. B.—M. U.—G. W. H.—B. E. N.—T. P.—Mr. P.—A. B.—F. C. P.—W. F. C.—E. H.—J. B.—T. S. (the chances are the endeavour to obtain payment, righteous as it would be, would fail; but this would depend on the exact terms of advertisement and letter. Take legal advice).—C. F. W. (view and plans will appear shortly).—T. W. (shall appear).—T. H. V. (note reached us quite late, when other list was in type).—Damp Walls (next week).—A. L. (next week).—T. C. S. (next week).—Chesterfield (next week).—A. W. M. (next week),

Errata.—In letter "About a New Style" (p. 69, *ante*), "unornamental" in first column, should be *monumental*, and "Roman, Early English, or Decorated," at end, should be *Norman*, Early English, &c.

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c., must be accompanied by the name and address of the sender, not necessarily for publication.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests of course with the authors.

PUBLISHER'S NOTICES.

The TWENTY-NINTH VOLUME of "THE BUILDER" (bound), for the year 1871, *is now ready, price One Guinea. Also,*

CLOTH CASES for binding the Numbers, price Two Shillings and Ninepence each.

SUBSCRIBERS' VOLUMES, on being sent to the Office, will be bound at a cost of Three Shillings and Sixpence each.

A COLOURED TITLE-PAGE can be had, Gratis, on personal application.

Bath and other Building Stones of Best Quality.—RANDELL, SAUNDERS, & CO. Limited, Quarrymen and Stone Merchants. List of Prices at the Quarries and Depôts, also Cost of Transit to any part of the United Kingdom furnished on application to Bath Stone Office, Corsham, Wilts.—[ADVT.]

Ashton & Green, Slate and Slab Merchants and Quarry Agents.—Shippers, Merchants, and Contractors furnished with Price-lists of every description of ROOFING and MANUFACTURED SLATE, Railway-rates, &c. Agents for London and Country for the Sale of the celebrated WHITLAND ABBEY GREEN SLATES. Drawings and Prices of A. & G.'s RED RIDGE TILES, specially prepared for use with these Slates, on application.—Offices and Show-rooms, 14 and 15, Bury-street, St. Mary Axe, London, E.C.—[ADVT.]

Turret Clocks.—Mr. Streeter, 37, Conduit-street, London, W., Manufacturer of Turret Clocks (with gravity or dead-beat escapement) for Churches and Public Buildings. Estimates and plans on application. Price:—Village clocks, from 15*l.*; church clocks, from 40*l.* The wheel-work throughout these clocks is of best hard brass or gun-metal. No iron wheels used. Timekeeping and durability guaranteed. Wholesale Entrance—Burlington Steam Works.[ADVT.]

NO PAINT—NO RUST.
GREAT DISCOVERY.
BRONZED IRON.
BY ROYAL LETTERS PATENT.
TURNER & ALLEN
(Sole Patentees),
ART-FOUNDERS, ENGINEERS, MERCHANTS, AND CONTRACTORS,
201, UPPER THAMES STREET, LONDON, E.C.

Extract from Paper read at the Royal Institute of British Architects, December 4, 1871, by Henry Carr, esq., C.E.:—

"The great desideratum of the day, no doubt, is some means of permanently protecting iron from rust: this is now said to be done by Messrs. Turner & Allen, of 201, Upper Thames-street.

If the process of coating iron with copper can be successfully carried out on a large scale, it will be one of the greatest boons of our time."

J. L. BACON & CO.
MANUFACTURERS OF
IMPROVED HOT-WATER APPARATUS,
FOR WARMING AND VENTILATING
Private Houses, Churches, Schools, Hospitals, Manufactories, Greenhouses, &c.
OFFICES AND SHOW-ROOMS:—
476, NEW OXFORD STREET, London, W.C.
WORKS:—FARRINGDON ROAD.
Publishers of a Pamphlet on "Hot-Water Heating."

CONTRACT for DANTZIC TIMBER, &c.
Contract Department, Admiralty, Whitehall, January 31, 1872.

TENDERS will be received on TUESDAY, the 5th of MARCH next, at TWO o'clock, for

2,650 LOADS of DANTZIC FIR TIMBER,
150 LOADS of DANTZIC OAK THICKSTUFF,
200 LOADS of DANTZIC OAK PLANK,
11,930 DECK DEALS, and 2,550 STAGE DEALS,

to be delivered at her Majesty's Dockyards.

Their Lordships reserve to themselves an unlimited power of selection, and do not bind themselves to accept the lowest or any Tender.

A form of Tender, containing all particulars, may be obtained at this Office.

FRANCIS W. ROWSELL,
Superintendent of Contracts.

YEOVIL WATER-WORKS. — To CONTRACTORS. — The Corporation of the Borough of Yeovil are prepared to receive TENDERS for the CONSTRUCTION of a COVERED SERVICE RESERVOIR, a TANK, and other Works connected therewith.

Drawings and specifications may be inspected, and forms of Tender may be obtained at the Office of the Town Clerk, in Yeovil, and of Messrs. THOMAS & CHARLES HAWKSLEY, Civil Engineers, 30, Great George-street, Westminster, S.W.; and Tenders must be delivered at the Town Clerk's Office on or before FRIDAY, the 1st day of MARCH, 1872. The Corporation do not pledge themselves to accept the lowest or any Tender.

Yeovil, 5th February, 1872.

LONDON and NORTH-WESTERN RAILWAY.—To CONTRACTORS and BUILDERS.—ERECTION of a PASSENGER STATION, FORMATION of a ROAD, &c. at Harlesden, on the Hampstead Junction Branch Line. — The Directors are prepared to receive TENDERS for the ERECTION of a PASSENGER STATION and CONSTRUCTION of a ROAD at Harlesden, on the Hampstead Junction Line. Plans and specifications may be seen at the Office of Mr. H. WOODHOUSE, Stafford Station, on and after the 12th inst. Tenders, addressed to the undersigned, must be sent in not later than WEDNESDAY, the 21st day of FEBRUARY. The Directors do not bind themselves to accept the lowest or any Tender.

S. REAY, Secretary.

Euston Station, London, N.W. February, 1872.

PERSONS desirous of TENDERING for the ERECTION of a BAPTIST CHAPEL, at CROYDON, will please send their names and addresses, on or before the 13th instant, to JOHN THEO. BARKER, Architect, West Croydon.

BOROUGH of LIVERPOOL.—To BUILDERS, CONTRACTORS, &c.—The Water and Baths Committee of the Council of the Borough of Liverpool desire TENDERS for the ERECTION of BATHS and WASHHOUSES in Steble-street, Toxteth Park. Plans may be inspected, and specification, accompanied by quantities and form of Tender, obtained at the Office of the Borough and Water Engineer, Municipal Offices, on payment of 2*l.* 2*s.* Sealed Tenders, which must be of the prescribed form, addressed to the Chairman of the Baths Committee, and endorsed "Tender for Baths and Washhouses, Steble-street," must be delivered at my Office, Municipal Offices, Dale-street, before TWELVE o'clock noon of the 24th instant. The Committee do not bind themselves to accept the lowest or any Tender.

JOSEPH RAYNER, Town Clerk.

Municipal Offices, Liverpool, February 5th, 1872.

BOROUGH of BRADFORD.—CORPORATION WATERWORKS.—To CONTRACTORS.—CONSTRUCTION of TWO RESERVOIRS at OXENHOPE.—The Corporation of Bradford are prepared to receive TENDERS for the CONSTRUCTION of TWO COMPENSATION RESERVOIRS, and the WORKS therewith connected, at Leeming and Leeshaw, at Oxenhope, in the township of Haworth, and parish of Bradford, in the West Riding of the county of York. Drawings and specifications may be examined, and forms of Tender may be obtained, at the Office of Mr. CHARLES GOTT, Civil Engineer, Corporation Offices, Bradford, on and after TUESDAY, the 6th of FEBRUARY instant, between the hours of TEN in the forenoon and FIVE in the afternoon. Tenders must be delivered at the Town Clerk's Office, Bradford, sealed, and addressed, "Chairman of Waterworks Committee,—Tender for Reservoirs," before TEN o'clock a.m. on FRIDAY, the 1st of MARCH next. The Corporation do not bind themselves to accept the lowest or any Tender.—By order,

W. T. McGOWEN, Town Clerk.

Corporation Offices, Bradford, 2nd February, 1872.

TO BUILDERS.—Notice is hereby given, that PLANS and SPECIFICATIONS for BUILDING a NEW MANSION, with Stables, &c. at Brandfold, in the parish of Goulthurst, and county of Kent, about six miles from the Marden station of the South-Eastern Railway, may be seen at Brandfold, from THURSDAY, the 15th, to SATURDAY, the 24th inst. on application to the Gardener, Mr. HENRY CURTIS; and all persons desirous of contracting for the works must send in sealed Tenders, directed to T. RIDGWAY, Esq. 15, Chesham-street, Belgrave-square, London, on or before SATURDAY, MARCH 2nd, 1872. Neither the lowest nor any Tender will necessarily be accepted. The Contractor must be prepared to enter into the usual legal bond for the fulfilment of his contract. Quantities will be supplied.

Dated February 7th, 1872.

TO BUILDERS and CONTRACTORS.—Notice is hereby given, that the Woolwich Local Board of Health will meet at the Town-hall, Woolwich, on TUESDAY Evening, the 20th FEBRUARY, 1872, at SEVEN o'clock precisely, to receive TENDERS for the CONSTRUCTION of about 400 feet of CIRCULAR BRICK SEWER, 8 feet 6 inches in diameter, and other Works, at North Woolwich. Plans and specification may be seen at the Office of the Local Board of Health, on and after WEDNESDAY, the 14th inst. The pegson whose Tenderimay be accepted will be required to find security for the due performance of the Contract. Tenders to be in one sum for the whole of the works, to be endorsed "Tender for Drainage, North Woolwich," addressed to the Clerk of the Woolwich Local Board of Health, and delivered at the Town-hall, Woolwich, before SEVEN o'clock p.m. on the day above mentioned. The Board do not bind themselves to accept either the lowest or any other Tender.

By order of the Board, ANDREW C. REED, Clerk.

Town-hall, Woolwich, February 7th, 1872.

TO BUILDERS.—The Guardians of the Poor of the Bridge Union will, at their Board meeting, to be held on the 29th instant, be prepared to receive TENDERS for the ERECTION of NEW VAGRANT WARDS, STABLE and COACH-HOUSE; together with New Wash-house, Hot-water Supply, and general Repairs to the Union Workhouse, at Bridge, near Canterbury, according to plans and specification prepared for that purpose, by Mr. BENJAMIN ADKINS, Architect, Faversham.—The plans and specification of the several works, may be seen at the Board-room, Union Workhouse, Bridge; and bills of quantities procured, on application to the Architect, to whom application is also to be made for any further information respecting the works. The Tenders (prepared upon the form supplied), are to be sent in to the Clerk to the Board of Guardians, Burgate-street, Canterbury, on WEDNESDAY, the 28th day of FEBRUARY, before FOUR o'clock in the afternoon. The Guardians do not bind themselves to accept the lowest or either of the Tenders, and the person whose Tender may be accepted, must be prepared with satisfactory sureties for the due performance of the works if required by the Guardians.—By order of the Board, ALLEN FIELDING, Clerk.

Canterbury, February 6, 1872.

EDMONTON UNION.—To BUILDERS and OTHERS.—ALTERATIONS and ADDITIONS to the EDMONTON WORKHOUSE.—The Board of Guardians will be prepared, at a meeting to be held at the Board-room of the Union Workhouse, at Edmonton, on the 21st day of FEBRUARY inst. to receive TENDERS for carrying out certain PROPOSED ALTERATIONS and ADDITIONS to their WORKHOUSE, at Edmonton. Sealed Tenders, endorsed "New Buildings, Edmonton Union," must be delivered to me, at my Office, at Edmonton, on or before the 20th day of FEBRUARY inst. The plans and specifications may be seen at the Office of the Clerk to the Guardians, Edmonton, and all information obtained at the Offices of the Architect, Mr. T. E. KNIGHTLEY, 106, Cannon-street, City. Persons Tendering are to take out their own quantities, the Board not undertaking to be responsible for the same. The Board do not bind themselves to accept the lowest or any Tender. Security in the penal sum of 500*l.* will be required to be given by the builder whose Tender shall be accepted for the due performance of the contract, and the names and addresses of two responsible persons as sureties must be given with the Tenders. No Tender delivered after the time stated will be opened.—By order of the Board,

WILLIAM PULLEY, Clerk to the Guardians.

Edmonton, February 1st, 1872.

TO DUST CONTRACTORS.—The Sewer Authorities of the Parish of Willesden are prepared to receive TENDERS for the REMOVAL of DUST, ASHES, VEGETABLE, and other HOUSE REFUSE in this Parish for the ensuing year.

Tender No. 1 to consist of that part of the parish north of the North London Railway, and No. 2 of that part of the parish which lies south of that line.

The Contractor to find a shoot, horses, carts, labour, tools, &c.

Bonds will be required, with two sureties of 100*l.* each, for the performance of the contract.

The Sewer authorities do not bind themselves to accept the lowest or any Tender.

Tenders to be sent to me on or before the 15th instant.

W. A. TOOTELL.

Edgware, February 3, 1872.

WATER-CARTS. — Notice is hereby Given, that the Board of Works for the St. Saviour's District are prepared to receive TENDERS for the SUPPLY and USE of a sufficient number of WATER-CARTS, with all necessary working gear, together with horses and competent drivers and men, to well and efficiently water the roads and streets within the district, comprising the two parishes of St. Saviour and Christchurch, from the 1st day of March to the 31st day of October next, a period of eight months.

The carts, horses, drivers, and men are to be available and in working order at all times, and the watering is to be done to the satisfaction of the Board, and as directed by their Surveyor or other officer.

Tenders must be left at the Offices of the Board not later than FOUR o'clock p.m. on WEDNESDAY, the 14th of FEBRUARY instant, and persons Tendering should be in attendance at that time. The contractor will have to execute a contract and, with one surety, a bond in the penal sum of 250*l.* and he will have to bear the expense of the bond. Drafts may be seen, and forms of Tender obtained on application.

HERBERT STURMY, Clerk.

Board-room, Emerson-street, Bankside, S.E. Feb. 1st, 1872.

TO ROAD and SEWER CONTRACTORS.

Persons desiring to TENDER for the MAKING UP SEWERING and CURBING of Ham Frith-road, Stratford, Essex, can obtain forms of Tender upon application to Mr. JOHN B. BEALE, Frith Cottage, Ham Frith-road, from SATURDAY to WEDNESDAY next, between NINE a.m. and EIGHT p.m. Plans and sections can be seen at the Town-hall, from TEN till FIVE. Approximate length of road, 780 feet. Sealed Tenders deliverable to Mr. J. B. BEALE, as above, before SIX p.m. THURSDAY, the 15th.

TO SEWER CONTRACTORS.—FRANKFORT-ON-THE-MAIN SEWERAGE WORKS.—MAIN LOW LEVEL SEWER with part of OSTEND DISTRICT. — Contract No. 41.

The Frankfort Board of Works are prepared to receive TENDERS from persons willing to contract for the MAKING of about the following lengths of BRICK and PIPE SEWERS and DRAINS, viz.—

2184	lineal metres	Brick Sewer, 6 ft. by 4 ft. diameter, 10 in. work.
264	,,	Flushing Reservoir Sewer, 5 ft. diameter, 15½ in. and 10 in. work.
18	,,	Brick Sewer, 4 ft. 6 in. by 3 ft. diameter, 10 in. work.
410	,,	Brick Sewer, 3 ft. 6 in. by 2 ft. 4 in. diameter, 5 in. work.
630	,,	Brick Sewer, 3 ft. by 2 ft. diameter, 5 in. work.
25	,,	Brick Inverted Syphon, 3 ft. diameter, 21 in. and 15½ in. work.
229	,,	15-in. Pipe Sewer.
146	,,	12-in. ,,
748	,,	9-in. and 6-in. Pipe Drains.
4674		

And the following special works excluded from the above lengths:—Twenty Side-entrance Shafts and Gangways; seven Flushing-Gate Chambers; twenty-six Bell-mouthed Sewer Junctions; twenty-five Bell-mouthed Abzweigungen (off branches); fifteen Penstock Shafts: forty-five Street Ventilating Shafts; nine Lampholes; and 184 Street Gullies; together with the Building in of House Junction Blocks and all ironwork connected with the several works.

The bricks, ashlar work, pipes, iron, and other materials are for the most part provided by the Board of Works.

Specifications and detailed plans, including boring sections, may be inspected at the Office of the Engineers, 16, Pauls Platz, on and after FRIDAY, the 9th inst. where duplicate bills of quantities may also be obtained on payment of the sum of 2s. 6d. or will be forwarded post-free, on receipt of 5s. in postage stamps.

Tenders upon the forms supplied, to be sent in addressed to the Board of Works, Paul Platz 3, Frankfort-on-the-Main, and endorsed "Tender for Low Level Sewer—Contract No. 41," not later than SATURDAY, the 2nd of MARCH next.

By order of the Board.

N.B.—No pledge is given that the lowest or any Tender will be accepted.

Frankfort-on-the-Main, February 6th, 1872.

TO SEWER CONTRACTORS.—FRANKFORT-ON-THE-MAIN SEWERAGE WORKS. — Contract No. 40. SACHSENHAUSEN STORM OVERFLOW SEWER.

The Frankfort Board of Works are prepared to receive TENDERS from persons willing to contract for the CONSTRUCTION of the following WORKS:—

42	lineal metres	Outlet Pipe, 3 ft. 6 in. diameter, under the bed of the river, including the necessary Coffer Dams, &c.
97	,,	Brick Outlet Sewer, 3 ft. 9 in. diameter, 27 in. and 15½-in. work.
16	,,	Brick Inverted Syphon, 3 ft. 9 in. diameter, 21 in. and 15½ in. work.
973	,,	Brick Sewer, 4 ft. by 3 ft. diameter, 10 in. work.
33	,,	Brick Sewer, 3 ft. 6 in. by 2 ft. 4 in. diameter, 5 in. work.
224	,,	9 in. and 6 in. pipe drains.
1385	,,	

Together with thirteen Penstock Chambers; eleven Bell-mouthed Sewer Junctions and Abzweigungen (off branches) seven Side Entrance Shafts and Gangways; two Flushing Gate Chambers; thirty-six Street Ventilating Shafts; sixty-four Street Gullies, and the necessary House Junctions, and other works in connexion therewith.

The bricks, pipes, ashlar work, cement, iron, and other materials, are for the most part provided by the Board of Works.

Specifications and detailed plans, including boring sections, may be inspected at the Office of the Engineers, 16, Pauls Platz, on and after FRIDAY, the 9th instant, where duplicate bills of quantities may also be obtained, on payment of the sum of 2s. 6d. or will be forwarded, post free, on receipt of 4s. in postage stamps.

Tenders, upon the forms supplied, to be sent in, addressed to the Board of Works, Pauls Platz 3, Frankfort-on-the-Main, and endorsed "Tender for Sachsenhausen Overflow Sewer, Contract No. 40," not later than SATURDAY, the 2nd MARCH next.

By order of the Board.

N.B.—No pledge is given that the lowest or any Tender will be accepted.

Frankfort-on-the-Main, February 6th, 1872.

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—The Highway Board of the District of Axbridge are desirous of receiving APPLICATIONS from Persons fully competent to undertake the duties of SURVEYOR, as required by the said Act.

The Salary is fixed at 200*l.* per annum, which is to include horse-hire, travelling, and other Personal expenses rendered necessary in the performance of the duties. No assistance will be allowed by the Board. The person appointed will be required to keep the accounts, as laid down by Act of Parliament; to devote his whole time to the duties of his Office; and find the security of the Guarantee Society to the amount of 300*l.*

The district comprises thirty-eight parishes, the town of Axbridge being nearly in the centre, where the Surveyor will be required to reside. The farthest part of the district from the town is about 9 miles, and the public roads are estimated at 372 miles or thereabouts, exclusive of footways.

Applications, accompanied by testimonials of character, capability, age, &c. must be sent to the Clerk, by post, on or before the morning of the 14th day of FEBRUARY, and due notice will be given to any candidate whose attendance may be required. None but experienced Surveyors need apply.

For any further information apply to

J. W. BENNETT, Clerk to the said Board.

Dated, Axbridge, 25th January, 1872.

TO ARCHITECTS.—The Aberystwyth

School-Board are prepared to receive APPLICATIONS for the APPOINTMENT of ARCHITECT to the Board.—Letters, stating terms, &c. to be sent in to the Clerk of the Board not later than FRIDAY, the 9th day of FEBRUARY next.

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